

Norton Sound Summer Commercial Red King Crab Fishery  
Observer Project Summary Report, 1996

By

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## INTRODUCTION

The Norton Sound Section of the Northern Bering Sea District consists of all waters in statistical area Q that are north of the latitude of Cape Romanzof, east of 168 west longitude, and south of the latitude of Cape Prince of Wales (Figures 1 and 2). A large vessel summer commercial red king crab (*Paralithodes camtschatica*) fishery existed in the Norton Sound Section from 1977 through 1992 (Appendix Table 2). No summer commercial fishery occurred in 1991 due to a lack of staff necessary to manage the fishery. The budget had been cut the previous winter. In 1992 the large vessel summer commercial fishery resumed. Regulation changes adopted during the March 1993 Board of Fisheries meeting changed the character of the fishing fleet to that of a small boat fleet. A superexclusive designation went into effect for the Norton Sound commercial crab fishery June 27, 1994. A vessel registered for the Norton Sound crab fishery may not be used to take king crab in any other registration area during that registration year. A vessel moratorium was put into place for the 1996 season with the intention to create a license limitation in the near future.

The National Marine Fisheries Service conducted a trawl survey to examine the abundance of Norton Sound red king crab in late August 1991 (Appendix Table 5). The results of that survey as compared to the 6 previous trawl surveys show a gradual trend of increasing abundance since the low recorded in 1982. The 1991 survey estimated the total abundance of legal king crab to be 3.4 million pounds present in the open commercial fishing area. The management plan for Norton Sound red king crab sets the harvest exploitation at 10% of the estimated legal king crab portion in the population. Since the 1991 survey was the most current assessment, it was used to set the 1996 guideline harvest at 340,000 lbs. The Alaska Department of Fish and Game conducted a trawl survey to examine the abundance of Norton Sound red king crab from August 7 - 18, 1996. A population estimate from this survey will not be available until early in 1997.

The 1996 summer commercial red king crab fishery opened at 12 noon, July 1 in the Norton Sound Section. Fishermen did not set pots until July 9 due to a strike by fishermen. A total of 51 catcher vessels were registered for the summer commercial crab season. All but 9 of these vessels were 32 feet or less. These 9 larger vessels ranged from 40 feet to 58 feet. Forty-one vessels actually made deliveries and 50 permits were fished. There were three land based processors that took part in the fishery. No floating crab processors or catcher/processors operated in Norton Sound during the 1996 summer fishery, therefore no independent observers were placed on board commercial vessels. One ADF&G fishery biologist was stationed in Nome to monitor the fishery, act as onboard observer/sampler on catcher vessels and sample legal crab delivered to buyers in Nome. This was the only person dedicated for collecting the essential biological and management data which is necessary in determining the magnitude of the commercial harvest and tracking the status of the stock. The observer also provides the means to enforce size and sex restriction regulations that protect the resource. This person also served as a crew member for the 1996 Norton Sound king crab trawl survey conducted in August, which reduced the time spent as fishery observer.



## **Objectives and Tasks**

The specific objectives and tasks of the ADF&G monitor/observer during the commercial season are to:

1. Monitor commercial harvest of red king crab on a daily basis.
2. Report the number of pots pulled and number of legal crab harvested for each statistical area fished by the vessel on which the observer is placed and by any vessel sampled for legal catch at delivery stations.
3. Obtain and record on a daily basis (when on board catcher vessel) at least 100 length frequency samples of harvested legal male red king crab (carapace width > 4-3/4 inches), 100 length frequency samples of incidentally caught sublegal male red king crab, and at least 20 length frequency samples of incidentally caught female red king crab.
4. Determine the carapace age of sampled crab.
5. Determine the percentage of recruits in the commercial harvest sampled (new shell legal crab with carapace length < 115 mm).
6. Determine the degree of ovigerity of sampled female crab.
7. Develop a relative abundance index for legal male, sublegal male and female king crab by recording the catch of as many pot lifts as is required to obtain a sample size of 300 or more crab per day.
8. Document bycatch species by number if possible (optional).

## **METHODS**

### **Commercial Fishery**

The methods used during the 1996 commercial crab season for catch monitoring and reporting, sampling crab, skipper interviews, and collecting information from tagged crab are presented in the ADF&G Norton Sound King Crab Operational Plan.



## RESULTS

### Harvest Summary

Catch reporting logs were kept by buyers and by skippers of catcher vessels for each statistical area fished. Buyers verbal reports were to be relayed daily by 9:00 a.m. to the ADF&G office in Nome. Fish tickets were due in to the ADF&G office on Friday of each week throughout the duration of the fishery. Vessel reports from fishermen and catcher/seller fish tickets were required every Monday for the duration of the fishery. Compliance with reporting requirements was generally good. Daily catch statistics can be found in Table 1 and Figure 3. During the final two weeks of the commercial fishery, various fishermen reported anywhere from 10% to 50% of their legal catch in a soft shell, newly molted condition.

The total commercial catch was 75,695 crab. A total of 226,721 pounds were harvested (Table 1). This includes approximately 4,139 pounds of deadloss. There were 41 vessels making 264 deliveries. Fifty permits were fished. Average weight for commercially caught crab was 3.0 lb/crab. A total of 10,570 pots were pulled during the fishery.

Fish ticket reports document that 13 statistical areas were fished (Table 2). The greatest amount of the harvest, 31.5%, was caught in statistical area 636401. Areas 626401, 666330, and 646401 accounted for 20.1%, 11.4%, and 10.2%, respectively. The remainder of the catch was caught in 9 other areas. Total harvest for individual statistical areas can be found in Table 2.

Just over 30% of all pot lifts occurred in area 636401, 16% in area 626401, 11.5% in area 666330, 10.9% in area 646401, 8.3% in area 656401, 8.2% in area 656330, and 4.7% in area 676400. The remaining 10% came from statistical areas 666401, 626331, 636330, 646301, 646330, and 676300.

The overall CPUE for the 1996 fishery was 7.1 crab/pot (Table 1). Stat area 646301 and 636330 had the greatest CPUE with 17.4 crab/pot and 12.4 crab/pot, respectively (Table 2).

Fourteen percent of the total harvest was caught by Norton Sound fishermen, 43% of the harvest was caught by Yukon Delta fishermen, and 43% was caught by fishermen based in other parts of the state and outside of Alaska.

Four landings were made by fishermen registered as catcher sellers. Two land based processing companies operated out of Nome. Another company bought live crab, and one delivery was made to a company on St. Paul Island. This was due to the fact that a catcher vessel left the grounds of the Norton Sound District with crab on board. During the 1996 fishery one tender was used to transport live crab from Eastern Norton Sound.



## **Legal Male King Crab**

Carapace length measurements and shell age were collected from 787 legal male red king crab throughout the duration of the 1996 summer fishery. Carapace age was classified as new (11 months old) or old (at least 23 months old) (Table 3, Figure 4). Overall mean carapace length of the legal male red king crab sampled was 117.1mm (Table 3). Male crab with new shell carapaces made up 63.5% of the total legal male king crab sampled, while old shell crab made up 36.5% of the sample (Table 3, Figure 4). Recruit crab made up 30.4% of all legal male crab sampled (Table 3). Postrecruit crab made up 69.6% of the legal crab sampled.

## **Sublegal (Prerecruit) Male King Crab**

No sublegal male king crab information was collected during the 1996 summer commercial king crab fishery. Refer to the 1996 Trawl Survey section for sublegal crab assessment.

## **Female King Crab**

No female king crab information was collected during the 1996 summer commercial king crab fishery. Refer to the 1996 Trawl Survey section for female crab assessment.

## **1996 Norton Sound King Crab Trawl Survey**

The Department conducted a king crab trawl survey August 7 through August 18, 1996. There were 483 measurable red king crab caught. The composition of the crab catch was 66 legal male, 248 sublegal male, and 169 female red king crab. A population estimate using data gathered during the trawl survey will not be available until early in 1997. Length frequency, shell age, and ovigerity information was collected and analyzed for the purpose of this report. This information is preliminary.

A total of 314 male red king crab were caught during the survey. Prerecruit crab made up 79%, recruit crab made up 7.6% and postrecruit made up 13.4% (Table 4, Figure 5). During the survey, 31 soft, and new-pliable shell male crab were caught. This represents approximately 10% of the male crab catch. Some double shell male crab were also observed during the survey.

One hundred and sixty-nine female red king crab were captured during the survey. Juvenile female crab composed 65.1% and adult female crab 34.9% of the catch based on the modeled minimum length at maturity of 73 mm (Jeff Bromaghin, Personal Communication ADF&G, Anchorage). Juvenile crab had carapace lengths that ranged from 23 mm to 72 mm (Table 5, Figure 6). Mean length for juvenile crab was 63 mm. Adult female crab had carapace lengths ranging from 68 mm to 110 mm. Mean length for adult female crab was 81.3 mm. Twenty percent of the adult female crab had a clutch



size of 90-100%, 41% had a clutch size between 60-89%, 14% had a clutch size between 30-59%, and 4% had a clutch size between 1-29%. Twenty-one percent of adult female crab captured had no clutch present. In the adult female crab examined, egg color was observed to be purple or purple brown. No eyed eggs were observed.

### **Tagged Crab**

Twenty-four male crab with tags were turned into the ADF&G office during the 1996 commercial fishery (Table 6). Only 3 of the recovered tags were returned without information. Of those tagged crab returned with sufficient information, one crab had been tagged in 1990, 16 crab had been tagged in the winter of 1995, and 7 crab had been tagged in the winter of 1996. One crab tagged in winter of 1996 measuring 76 mm was measured on August 29 at 95 mm and had a hard, newly molted shell. This indicated the crab grew 19 mm, and had molted just prior to recapture. The remaining 9 crab tagged in 1996 and recaptured during the 1996 summer fishery had no apparent growth. The recaptured tagged crab from 1990 grew 34 mm, indicating 3 molts and 3 skip molts. One of the recaptured crab tagged in 1995 did not appear to have grown, and had an old shell. This indicates that the crab skip molted last year. Nine crab tagged in 1995 did show growth ranging from 10 mm to 14 mm. Mean growth per molt for the 11 recaptured crab tagged in 1990 and 1995 was 13 mm.

## **DISCUSSION**

### **Harvest Summary**

A total of 50 permit holders on 41 catcher vessels made 264 landings in the 1996 Norton Sound summer commercial red king crab fishery. The total number of crab caught was 75,695 and the total number of pots pulled was 10,570. The CPUE was 7.1 crab/pot. Total harvest was 226,721 pounds of king crab. The harvest guideline was 340,000 pounds. The exvessel price for crab was \$2.29 per pound. The value of the 1996 fishery is estimated at \$519,000. This is the lowest summer commercial harvest since the Norton Sound crab fishery transition to a small vessel fishery in 1993 (Appendix Tables 2 & 3, Figure 7). During the final two weeks of the fishery, reports by commercial fishermen of double shell and newly molted, soft shell crab increased.

Fish ticket records show that the 1996 season's largest fishing effort (46.3%) and harvest (51.6%) occurred in statistical areas 636401 and 626401 (Table 2). During the 1995 summer fishery, 38% of the fishing effort and 33% of the harvest was from area 646401 (Brennan, 1996). Fifteen percent of the harvest in 1995 occurred just south of Golovin in stat areas 626401, 636401, and 636402 (Brennan, 1996). Yet this area accounted for less than 5% of all pot lifts and only four vessel fished there. Fishing in this area occurred only near the end of the 1995 season. A number of vessels based their fishing operation out of



the village of Golovin at the start of the 1996 season. In the 1994 summer commercial fishery, 44% of the harvest was from area 646402, and 43% of the pots pulled were from area 656402 (Brennan, 1995). In the 1993 summer commercial fishery 58% of the harvest and 55% of all pots pulled occurred in area 656402 (Brennan, 1993). In the 1992 summer commercial fishery, area 656401 accounted for 47% of all pot pulls and 73% of the total harvest (Brennan, 1992). In the 1990 summer commercial fishery area 666401 accounted for 88% of all pot pulls and 91% of the total harvest (Gebhard, 1990). There has been a shift in the fishery effort and harvest eastward and closer to shore since 1992. Comparisons of the annual summer commercial harvest of crab by statistical area can be found in Appendix Table 1.

Based on fish ticket data, statistical area 646301 had the greatest CPUE of 17.4 crab/pot (Table 2). Overall CPUE for the 1996 season was 7.1 crab/pot. Appendix Tables 2 and 3 relate previous commercial crab harvest, effort, CPUE and value to the 1996 season. During the 1996 fishery, there were approximately 1,640 pots on the fishing grounds. Therefore, the CPUE in years with a similar number of pots deployed on the grounds are compared to the overall CPUE in 1996: 5.6 crab/pot in 1995; 9.3 crab/pot in 1994; 4.3 crab/pot in 1992; 19 crab/pot in 1990; 10 crab/pot in 1987; 11 crab/pot in 1985; and 14 crab/pot in 1984 (Appendix Tables 2 and 3). CPUE has decreased over time.

Statistical area 676300 had the greatest average weight of 3.55 pounds per crab according to fish ticket data (Table 2). Overall average weight per crab for the 1996 season was 3.0 pounds. This compares to an average weight of 3.0 in 1995 (Brennan 1996), 3.0 pounds in 1994 (Brennan, 1994), 2.9 pounds in 1993 (Brennan, 1993), 3.0 pounds in 1992 (Brennan, 1992), 3.1 pounds in 1990 (Gebhard, 1990), 3.1 pounds in 1989 (Gebhard and Lean, 1989), and 3.1 pounds in 1988 (Gebhard and Lean, 1988). The 1996 average weight seems to be consistent with prior years.

### **Legal Male King Crab**

The overall mean carapace length of sampled legal male king crab during the 1996 season was 117.1 mm (Table 3). Mean carapace length was 118.2 in 1995 (Brennan, 1996), 118.8 mm in 1994 (Brennan, 1994), 119.1 mm in 1993 (Brennan, 1993), 119.7 mm in 1992 (Brennan, 1992), 121.1 mm in 1990 (Gebhard, 1990), 119.8 mm in 1989 (Gebhard, 1989), and 119.0 mm in 1988 (Gebhard and Lean, 1988).

The 1996 season's legal male new shell/old shell ratio was 64% new shell to 36% old shell (Table 3). In the 1995 season, the ratio was 79% new shell to 21% old shell (Brennan, 1996). This is very different from the ratio of 29% new shell and 71% old shell in 1994 (Brennan, 1994). In 1993, the legal male new shell/old shell ratio was 90% new shell and 10% old shell (Brennan, 1993). In 1992 legal male new shell/old shell ratio was 71% new shell and 29% old shell (Brennan, 1992). Legal male new shell/old shell ratio in 1990 was 83% new shell and 17% old shell (Gebhard, 1990). In 1989 this ratio was 71% new shell and 29% old shell (Gebhard, 1989). In 1988 the ratio was 74% new shell and 26% old shell. The 1996 old shell ratio is the second highest since 1987.



Recruit king crab made up 30% of the harvested stock sampled during the 1996 commercial season (Table 3). Total post recruits made up 70% of the harvested stock sampled. The 1996 and 1995 commercial crab fishery showed a great improvement in recruitment compared to the 1994 season (Appendix Table 4). The 1995 season showed the highest recruitment since the 1986 summer fishery.

### **1996 Norton Sound King Crab Trawl Survey**

The population estimate using data gathered during the 1996 survey is expected to be available early in 1997. The 1997 summer commercial guideline harvest will be determined using this estimate.

The length frequency distribution of male crab captured during the 1996 trawl survey was 79% prerecruit, 7.6% recruit, and 13.4% postrecruit (Table 4). During the 1996 winter crab study the length frequency distribution of male crab was 64.3% prerecruit, 10.1% recruit, and 25.5% postrecruit (Rob, 1996). The length frequency distribution of male crab in both surveys are similar especially considering that the commercial fishery had been underway. Approximately 10% of the male red king crab caught during the 1996 survey had soft shells or new-pliable shells. These crab had molted just before being caught. A number of double shell male crab were also observed. This, along with fishermen reports, indicate that the male red king crab had begun their seasonal molt in mid August. It is believed that male red king crab in Norton Sound molt from late August to October (Brannian, 1987). It seems that male crab began to molt earlier in August this year than has been the trend in the past.

Powell et al. (1983) found that 50% maturity was attained at a carapace length of approximately 68mm in Norton Sound female red king crab. Brannian (1987) used probit analysis to estimate the percent adult by length and found similar results. In the 1985 NMFS Norton Sound Trawl Survey Report (Stevens, and MacIntosh, 1986), a plot of the percent of female crab that were ovigerous shows 50% maturity at 73mm. Analysis of Norton Sound female red king crab length frequency and ovigerity data for all ADF&G summer and winter crab projects and the 1996 trawl using SYSTAT, resulted in estimating the length at which 50% of the female crab are mature to be 71.6mm (Jeff Bromaghin, Personal Communication, ADF&G, Anchorage). A length of 72mm was therefore recommended to be used as the smallest size of a mature female king crab in Norton Sound. Therefore, in Norton Sound, juvenile red king crab are those female crab less than 72 mm with no egg clutch. During the 1996 trawl survey juvenile female red king crab made up 65.1% of all female crab caught (Table 5).

### **Tagged Crab**

During the 1996 summer commercial crab fishery, a new approach for rewarding the return of tagged crab was used. Baseball caps picturing a crab and the words "Norton Sound" and "Tag Reward" were used to encourage commercial fishermen to report and return tagged crab to the ADF&G office. This replaced the former \$3.00 reward. Twenty



four tagged crab were returned during the summer fishery. Only 3 of these returned crab had no information available. In the 1995 fishery, 10 of 23 tagged crab were returned with no useful information. Completeness of information in 1996 was a great improvement, and most fishermen reported that they would return tagged crab to get a hat. Mean growth per molt for recaptured tagged crab was 13mm. One sublegal crab tagged in the 1996 winter crab project and captured during the 1996 summer fishery appeared to have molted just prior to being caught. This crab had a newly molted, hard shell at least 1 month old. It had grown 19 mm. One crab tagged in the 1990 winter study and caught during the 1996 summer fishery grew 34 mm in 6 years. This indicated that the crab had molted 3 times and skip molted 3 times.

### **COMMENTS ON SAMPLING EFFORT**

There has been a change in the character of the summer commercial fishery since 1993 due to regulation changes affecting pot limits, opening dates and a regulation making Norton Sound a superexclusive registration area. The quality and quantity of data collected since the 1993 summer crab fishery has differed greatly from previous years due to the nature of the small vessel fishery. No floating processor or catcher processor took part in the 1996 fishery, therefore no independent observers were onboard commercial vessels.

The ADF&G fishery monitor did not observe on small catcher vessels during the 1996 fishery due to conflicting commitments with the trawl survey. No information was collected on observed pot lifts, sublegal male and female length frequencies, and catch rates of legal and sublegal crab during the commercial fishery. However, routine sampling of the commercial catch did occur. This is important in ensuring size limits are being enforced, and to assist management biologists in determining recruitment and health of the crab population.

### **ENFORCEMENT**

The Fish and Wildlife Protection officer was able to patrol using a chartered vessel one time throughout the fishery. Surveillance using a twin engine airplane was also conducted during the 1996 fishery. Fishermen and buyer violations are still pending.

### **SUMMARY**

The 1996 summer commercial king crab fishery harvested 226,721 pounds of crab. The harvest guideline was 340,000 pounds of crab. This season's greatest fishing effort was concentrated in statistical areas 636401 and 626401. A total of 75,695 crab were harvested and 10,570 pots were pulled. The overall CPUE for the season was 7.1 crab/pot.



A total of 51 catcher vessels were registered for the summer commercial crab season. All but 9 of these vessels were 32 feet or less. These 9 larger vessels ranged from 40 feet to 58 feet. Two shore-based processors and one live crab buyer operated in Nome throughout the duration of the fishery. Only 4 deliveries were made by catcher sellers. One delivery was made outside of the Norton Sound District. This was only the third time in the history of the fishery that the majority of the king crab harvest was delivered and processed in Nome.

Overall average weight was 3.0 lb/crab. The overall mean carapace length of sampled legal male crab during the 1996 season was 117.1 mm. The legal male new shell/old shell ratio was 63.5% new shell to 36.5% old shell. Recruit king crab made up 30.4% of the harvested stock sampled and post recruits made up 69.6% of the harvested stock. The problem with recruitment and old shell crab noticed in the 1994 fishery was not obvious, but a change in growth rate may have occurred as evidenced by molting timing.

In the 1996 fishery 46% of all pot pulls occurred in areas 636401 and 626401. In the 1996 fishery, the closure line was not relaxed. The closure line has been relaxed during the 1993, 1994 and 1995 summer crab fishery to allow commercial fishing in a portion of previously closed areas. In 1993, 55% of the total number of pots pulled during the fishery were pulled in area 656402. During the 1994 fishery, approximately 74% of all pots pulled during the season were in area 646402 and 656402. In 1995, 41% of all pots pulled were in areas 656402 and 646402. It should be a priority to monitor the ratio of legal to sublegal crab in future fisheries if and when the closure line is relaxed.

Male king crab were found in soft shell, and newly molted, pliable shell condition in both the commercial fishery and the trawl survey. Double shell crab were also observed during the trawl survey. It appeared male crab were beginning their molt earlier than has been detected in previous summer fisheries.



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Table 1. Daily catch (using fish ticket data) for the commercial king crab harvest, Norton Sound Section, Eastern Bering Sea, July 1 - September 3, 1996.

| Date                | Permits | Landings | Number of Crab | Lbs of Crab Harvested | Cumulative Total (lbs) | No. of Pots Pulled | Average Weight | CPUE |
|---------------------|---------|----------|----------------|-----------------------|------------------------|--------------------|----------------|------|
| 10-Jul <sup>a</sup> | 2       | 2        | 749            | 2,249                 | 2,249                  | 77                 | 3.00           | 9.7  |
| 11-Jul              | 4       | 4        | 176            | 510                   | 2,759                  | 98                 | 2.90           | 1.8  |
| 12-Jul              | 13      | 13       | 1,891          | 5,419                 | 8,178                  | 504                | 2.87           | 3.8  |
| 13-Jul              | 6       | 6        | 1,429          | 4,125                 | 12,303                 | 291                | 2.89           | 4.9  |
| 14-Jul              | 9       | 9        | 3,277          | 9,265                 | 21,568                 | 410                | 2.83           | 8.0  |
| 15-Jul              | 2       | 2        | 430            | 1,204                 | 22,772                 | 80                 | 2.80           | 5.4  |
| 16-Jul              | 12      | 12       | 2,495          | 7,816                 | 30,588                 | 365                | 3.13           | 6.8  |
| 17-Jul              | 5       | 5        | 1,146          | 3,335                 | 33,923                 | 199                | 2.91           | 5.8  |
| 18-Jul              | 12      | 12       | 2,551          | 7,533                 | 41,456                 | 404                | 2.95           | 6.3  |
| 19-Jul              | 5       | 5        | 1,369          | 4,157                 | 45,613                 | 190                | 3.04           | 7.2  |
| 20-Jul              | 4       | 4        | 3,385          | 9,635                 | 55,248                 | 240                | 2.85           | 14.1 |
| 21-Jul              | 3       | 3        | 768            | 2,250                 | 57,498                 | 102                | 2.93           | 7.5  |
| 22-Jul              | 5       | 5        | 2,215          | 6,436                 | 63,934                 | 237                | 2.91           | 9.3  |
| 23-Jul              | 1       | 1        | 1,000          | 3,000                 | 66,934                 | 80                 | 3.00           | 12.5 |
| 24-Jul              | 2       | 2        | 84             | 244                   | 67,178                 | 49                 | 2.90           | 1.7  |
| 25-Jul              | 1       | 1        | 120            | 371                   | 67,549                 | 40                 | 3.09           | 3.0  |
| 26-Jul              | 3       | 3        | 2,031          | 5,944                 | 73,493                 | 190                | 2.93           | 10.7 |
| 27-Jul              | 4       | 4        | 845            | 2,687                 | 76,180                 | 146                | 3.18           | 5.8  |
| 28-Jul              | 16      | 17       | 4,535          | 13,366                | 89,546                 | 589                | 2.95           | 7.7  |
| 29-Jul              | 5       | 5        | 2,498          | 7,350                 | 96,896                 | 222                | 2.94           | 11.3 |
| 30-Jul              | 2       | 2        | 349            | 940                   | 97,836                 | 80                 | 2.69           | 4.4  |
| 31-Jul              | 3       | 3        | 775            | 2,333                 | 100,169                | 110                | 3.01           | 7.0  |
| 1-Aug               | 2       | 2        | 335            | 1,010                 | 101,179                | 80                 | 3.01           | 4.2  |
| 2-Aug               | 3       | 3        | 3,358          | 10,018                | 111,197                | 200                | 2.98           | 16.8 |
| 3-Aug               | 2       | 2        | 109            | 328                   | 111,525                | 80                 | 3.01           | 1.4  |
| 4-Aug               | 11      | 12       | 3,168          | 9,595                 | 121,120                | 490                | 3.03           | 6.5  |
| 5-Aug               | 3       | 3        | 99             | 276                   | 121,396                | 58                 | 2.79           | 1.7  |
| 6-Aug               | 3       | 3        | 566            | 1,646                 | 123,042                | 120                | 2.91           | 4.7  |
| 7-Aug               | 9       | 10       | 3,094          | 9,043                 | 132,085                | 456                | 2.92           | 6.8  |
| 8-Aug               | 3       | 4        | 607            | 1,653                 | 133,738                | 160                | 2.72           | 3.8  |
| 9-Aug               | 1       | 1        | 1,640          | 4,521                 | 138,259                | 80                 | 2.76           | 20.5 |
| 10-Aug              | 2       | 2        | 1,943          | 5,490                 | 143,749                | 200                | 2.83           | 9.7  |
| 11-Aug              | 7       | 7        | 1,547          | 4,975                 | 148,724                | 251                | 3.22           | 6.2  |
| 12-Aug              | 6       | 6        | 927            | 2,738                 | 151,462                | 297                | 2.95           | 3.1  |
| 13-Aug              | 2       | 2        | 460            | 1,497                 | 152,959                | 80                 | 3.25           | 5.8  |
| 14-Aug              | 1       | 1        | 309            | 898                   | 153,857                | 80                 | 2.91           | 3.9  |
| 15-Aug              | 9       | 9        | 1,547          | 4,918                 | 158,775                | 292                | 3.18           | 5.3  |
| 16-Aug              | 4       | 4        | 608            | 2,010                 | 160,785                | 157                | 3.31           | 3.9  |
| 17-Aug              | 8       | 8        | 2,733          | 8,140                 | 168,925                | 307                | 2.98           | 8.9  |
| 18-Aug              | 4       | 4        | 1,199          | 3,645                 | 172,570                | 238                | 3.04           | 5.0  |
| 19-Aug              | 1       | 1        | 971            | 2,915                 | 175,485                | 120                | 3.00           | 8.1  |
| 20-Aug              | 7       | 7        | 2,035          | 6,182                 | 181,667                | 300                | 3.04           | 6.8  |
| 21-Aug              | 9       | 9        | 1,272          | 4,403                 | 186,070                | 240                | 3.46           | 5.3  |
| 22-Aug              | 2       | 2        | 1,009          | 2,949                 | 189,019                | 80                 | 2.92           | 12.6 |
| 23-Aug              | 4       | 5        | 1,158          | 3,523                 | 192,542                | 260                | 3.04           | 4.5  |
| 24-Aug              | 2       | 2        | 1,356          | 4,118                 | 196,660                | 120                | 3.04           | 11.3 |
| 25-Aug              | 1       | 1        | 878            | 2,478                 | 199,138                | 40                 | 2.82           | 22.0 |
| 26-Aug              | 8       | 8        | 2,295          | 7,367                 | 199,138                | 338                | 3.21           | 6.8  |
| 27-Aug              | 1       | 1        | 225            | 777                   | 207,282                | 40                 | 3.45           | 5.6  |
| 28-Aug              | 2       | 2        | 419            | 1,339                 | 208,621                | 61                 | 3.20           | 6.9  |
| 29-Aug              | 3       | 3        | 574            | 1,678                 | 210,299                | 80                 | 2.92           | 7.2  |
| 30-Aug              | 1       | 1        | 145            | 423                   | 210,722                | 14                 | 2.92           | 10.4 |
| 31-Aug              | 10      | 11       | 3,072          | 10,130                | 220,852                | 337                | 3.30           | 9.1  |
| 1-Sep               | 4       | 4        | 900            | 2,702                 | 223,554                | 81                 | 3.00           | 11.1 |
| 2-Sep               | 4       | 4        | 352            | 1,167                 | 224,721                | 90                 | 3.32           | 3.9  |
| 3-Sep               |         |          |                |                       |                        |                    |                |      |
| Totals:             | 50      | 264      | 75,695         | 226,721 <sup>b</sup>  |                        | 10,570             | 3.00           | 7.1  |

<sup>a</sup> Crab fishermen on Strike through 7/9/96.

<sup>b</sup> Includes 4,139 lbs of deadloss (approximately 2,490 lbs not reported on fish tickets).



Table 2. Red king crab summer commercial catch total (from fish ticket reports) by statistical area for the Norton Sound Section, Eastern Bering Sea, July 1 - September 3, 1996.

| Statistical Area    | Number | Pounds  | Pots Pulled | CPUE | Average Weight (Lbs.) | Percent of Pots Pulled in Stat. | Percent Harvest in |
|---------------------|--------|---------|-------------|------|-----------------------|---------------------------------|--------------------|
| 626331              | 20     | 61      | 10          | 2.0  | 3.05                  | 0.1                             | 0.0                |
| 626401              | 15,226 | 45,045  | 1,694       | 9.0  | 2.96                  | 16.2                            | 20.1               |
| 636330              | 1,485  | 4,560   | 120         | 12.4 | 3.07                  | 1.1                             | 2.0                |
| 636401              | 24,317 | 70,677  | 3,142       | 7.7  | 2.91                  | 30.1                            | 31.5               |
| 646301              | 4,859  | 13,888  | 280         | 17.4 | 2.86                  | 2.7                             | 6.2                |
| 646330              | 969    | 2,894   | 239         | 4.1  | 2.99                  | 2.3                             | 1.3                |
| 646401              | 7,795  | 22,834  | 1,144       | 6.8  | 2.93                  | 10.9                            | 10.2               |
| 656330              | 4,938  | 15,446  | 862         | 5.7  | 3.13                  | 8.2                             | 6.9                |
| 656401              | 3,286  | 9,985   | 863         | 3.8  | 3.04                  | 8.3                             | 4.5                |
| 666330              | 7,597  | 25,519  | 1,201       | 6.3  | 3.36                  | 11.5                            | 11.4               |
| 666401              | 914    | 3,001   | 368         | 2.5  | 3.28                  | 3.5                             | 1.3                |
| 676300              | 154    | 546     | 37          | 4.2  | 3.55                  | 0.4                             | 0.2                |
| 676400              | 3,192  | 9,775   | 493         | 6.5  | 3.06                  | 4.7                             | 4.4                |
| Total: <sup>a</sup> | 74,752 | 224,231 | 10,453      | 7.1  | 3.00                  |                                 |                    |

<sup>a</sup> Does not include approximately 2,490 lbs of deadloss not reported on fish tickets.



Table 3. Carapace length measurement summary of sampled legal male red king crab captured during the commercial king crab harvest, Norton Sound Section, Eastern Bering Sea, July 1 - September 3, 1996.

| Carapace Length (mm) | New shell |                  |       | Old shell |                  |       | Total |                  |        |
|----------------------|-----------|------------------|-------|-----------|------------------|-------|-------|------------------|--------|
|                      | No.       | Ave Length Calc. | %     | No.       | Ave Length Calc. | %     | No.   | Ave Length Calc. | %      |
| 95                   |           | 0.00             | 0.0%  |           | 0.00             | 0.0%  | 0     | 0.00             | 0.0%   |
| 96                   |           | 0.00             | 0.0%  |           | 0.00             | 0.0%  | 0     | 0.00             | 0.0%   |
| 97                   |           | 0.00             | 0.0%  |           | 0.00             | 0.0%  | 0     | 0.00             | 0.0%   |
| 98                   |           | 0.00             | 0.0%  |           | 0.00             | 0.0%  | 0     | 0.00             | 0.0%   |
| 99                   |           | 0.00             | 0.0%  |           | 0.00             | 0.0%  | 0     | 0.00             | 0.0%   |
| 100                  |           | 0.00             | 0.0%  | 1         | 0.35             | 0.3%  | 1     | 0.13             | 0.1%   |
| 101                  | 8         | 1.62             | 1.6%  | 2         | 0.70             | 0.7%  | 10    | 1.28             | 1.3%   |
| 102                  | 7         | 1.43             | 1.4%  | 6         | 2.13             | 2.1%  | 13    | 1.68             | 1.7%   |
| 103                  | 10        | 2.06             | 2.0%  | 2         | 0.72             | 0.7%  | 12    | 1.57             | 1.5%   |
| 104                  | 17        | 3.54             | 3.4%  | 6         | 2.17             | 2.1%  | 23    | 3.04             | 2.9%   |
| 105                  | 17        | 3.57             | 3.4%  | 6         | 2.20             | 2.1%  | 23    | 3.07             | 2.9%   |
| 106                  | 16        | 3.39             | 3.2%  | 5         | 1.85             | 1.7%  | 21    | 2.83             | 2.7%   |
| 107                  | 19        | 4.07             | 3.8%  | 8         | 2.98             | 2.8%  | 27    | 3.67             | 3.4%   |
| 108                  | 11        | 2.38             | 2.2%  | 13        | 4.89             | 4.5%  | 24    | 3.29             | 3.0%   |
| 109                  | 24        | 5.23             | 4.8%  | 8         | 3.04             | 2.8%  | 32    | 4.43             | 4.1%   |
| 110                  | 29        | 6.38             | 5.8%  | 18        | 6.90             | 6.3%  | 47    | 6.57             | 6.0%   |
| 111                  | 17        | 3.77             | 3.4%  | 7         | 2.71             | 2.4%  | 24    | 3.39             | 3.0%   |
| 112                  | 13        | 2.91             | 2.6%  | 10        | 3.90             | 3.5%  | 23    | 3.27             | 2.9%   |
| 113                  | 13        | 2.94             | 2.6%  | 13        | 5.12             | 4.5%  | 26    | 3.73             | 3.3%   |
| 114                  | 19        | 4.33             | 3.8%  | 16        | 6.36             | 5.6%  | 35    | 5.07             | 4.4%   |
| 115                  | 19        | 4.37             | 3.8%  | 15        | 6.01             | 5.2%  | 34    | 4.97             | 4.3%   |
| 116                  | 28        | 6.50             | 5.6%  | 11        | 4.45             | 3.8%  | 39    | 5.75             | 5.0%   |
| 117                  | 27        | 6.32             | 5.4%  | 8         | 3.26             | 2.8%  | 35    | 5.20             | 4.4%   |
| 118                  | 12        | 2.83             | 2.4%  | 11        | 4.52             | 3.8%  | 23    | 3.45             | 2.9%   |
| 119                  | 18        | 4.28             | 3.6%  | 12        | 4.98             | 4.2%  | 30    | 4.54             | 3.8%   |
| 120                  | 24        | 5.76             | 4.8%  | 5         | 2.09             | 1.7%  | 29    | 4.42             | 3.7%   |
| 121                  | 12        | 2.90             | 2.4%  | 15        | 6.32             | 5.2%  | 27    | 4.15             | 3.4%   |
| 122                  | 15        | 3.66             | 3.0%  | 8         | 3.40             | 2.8%  | 23    | 3.57             | 2.9%   |
| 123                  | 14        | 3.44             | 2.8%  | 6         | 2.57             | 2.1%  | 20    | 3.13             | 2.5%   |
| 124                  | 7         | 1.74             | 1.4%  | 8         | 3.46             | 2.8%  | 15    | 2.36             | 1.9%   |
| 125                  | 11        | 2.75             | 2.2%  | 4         | 1.74             | 1.4%  | 15    | 2.38             | 1.9%   |
| 126                  | 9         | 2.27             | 1.8%  | 6         | 2.63             | 2.1%  | 15    | 2.40             | 1.9%   |
| 127                  | 10        | 2.54             | 2.0%  | 13        | 5.75             | 4.5%  | 23    | 3.71             | 2.9%   |
| 128                  | 3         | 0.77             | 0.6%  | 4         | 1.78             | 1.4%  | 7     | 1.14             | 0.9%   |
| 129                  | 6         | 1.55             | 1.2%  | 5         | 2.25             | 1.7%  | 11    | 1.80             | 1.4%   |
| 130                  | 13        | 3.38             | 2.6%  | 3         | 1.36             | 1.0%  | 16    | 2.64             | 2.0%   |
| 131                  | 4         | 1.05             | 0.8%  | 8         | 3.65             | 2.8%  | 12    | 2.00             | 1.5%   |
| 132                  | 11        | 2.90             | 2.2%  | 7         | 3.22             | 2.4%  | 18    | 3.02             | 2.3%   |
| 133                  |           | 0.00             | 0.0%  | 4         | 1.85             | 1.4%  | 4     | 0.68             | 0.5%   |
| 134                  | 4         | 1.07             | 0.8%  | 2         | 0.93             | 0.7%  | 6     | 1.02             | 0.8%   |
| 135                  | 5         | 1.35             | 1.0%  | 3         | 1.41             | 1.0%  | 8     | 1.37             | 1.0%   |
| 136                  | 2         | 0.54             | 0.4%  |           | 0.00             | 0.0%  | 2     | 0.35             | 0.3%   |
| 137                  | 3         | 0.82             | 0.6%  | 2         | 0.95             | 0.7%  | 5     | 0.87             | 0.6%   |
| 138                  | 5         | 1.38             | 1.0%  | 1         | 0.48             | 0.3%  | 6     | 1.05             | 0.8%   |
| 139                  | 5         | 1.39             | 1.0%  | 2         | 0.97             | 0.7%  | 7     | 1.24             | 0.9%   |
| 140                  | 4         | 1.12             | 0.8%  |           | 0.00             | 0.0%  | 4     | 0.71             | 0.5%   |
| 141                  | 5         | 1.41             | 1.0%  |           | 0.00             | 0.0%  | 5     | 0.90             | 0.6%   |
| 142                  | 1         | 0.28             | 0.2%  |           | 0.00             | 0.0%  | 1     | 0.18             | 0.1%   |
| 143                  | 1         | 0.29             | 0.2%  | 2         | 1.00             | 0.7%  | 3     | 0.55             | 0.4%   |
| 144                  |           | 0.00             | 0.0%  |           | 0.00             | 0.0%  | 0     | 0.00             | 0.0%   |
| 145                  | 1         | 0.29             | 0.2%  | 1         | 0.51             | 0.3%  | 2     | 0.37             | 0.3%   |
| 146                  |           | 0.00             | 0.0%  |           | 0.00             | 0.0%  | 0     | 0.00             | 0.0%   |
| 147                  | 1         | 0.29             | 0.2%  |           | 0.00             | 0.0%  | 1     | 0.19             | 0.1%   |
| 148                  |           | 0.00             | 0.0%  |           | 0.00             | 0.0%  | 0     | 0.00             | 0.0%   |
| 149                  |           | 0.00             | 0.0%  |           | 0.00             | 0.0%  | 0     | 0.00             | 0.0%   |
| 150                  |           | 0.00             | 0.0%  |           | 0.00             | 0.0%  | 0     | 0.00             | 0.0%   |
| Total No.            | 500       |                  | 63.5% | 287       |                  | 36.5% | 787   |                  | 100.0% |
| Mean                 |           | 116.9            |       |           | 117.6            |       |       | 117.1            |        |
| Total legal crab     |           |                  | 787   |           |                  |       |       |                  |        |
| Total Recruits       |           |                  | 239   |           |                  |       |       |                  |        |
| Percent              |           |                  | 30.4% |           |                  |       |       |                  |        |
| Total Post Recruits  |           |                  | 548   |           |                  |       |       |                  |        |
| Percent              |           |                  | 69.6% |           |                  |       |       |                  |        |



Table 4. Length frequency distribution of male crab captured at all stations during the Norton Sound trawl survey, August 7 - 18, 1996.(Preliminary Data) (Page 1 of 2)

| CARAPACE<br>LENGTH<br>(mm) | PRERECRUIT<br>(Sublegal) |      | RECRUIT |      | POSTRECRUIT |      | TOTALS |      |
|----------------------------|--------------------------|------|---------|------|-------------|------|--------|------|
|                            | No.                      | %    | No.     | %    | No.         | %    | No.    | %    |
| 25                         | 1                        | 0.3% |         | 0.0% |             | 0.0% | 1      | 0.3% |
| 26                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 27                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 28                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 29                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 30                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 31                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 32                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 33                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 34                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 35                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 36                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 37                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 38                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 39                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 40                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 41                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 42                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 43                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 44                         | 1                        | 0.3% |         | 0.0% |             | 0.0% | 1      | 0.3% |
| 45                         | 1                        | 0.3% |         | 0.0% |             | 0.0% | 1      | 0.3% |
| 46                         | 2                        | 0.6% |         | 0.0% |             | 0.0% | 2      | 0.6% |
| 47                         | 2                        | 0.6% |         | 0.0% |             | 0.0% | 2      | 0.6% |
| 48                         | 1                        | 0.3% |         | 0.0% |             | 0.0% | 1      | 0.3% |
| 49                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 50                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 51                         | 1                        | 0.3% |         | 0.0% |             | 0.0% | 1      | 0.3% |
| 52                         | 1                        | 0.3% |         | 0.0% |             | 0.0% | 1      | 0.3% |
| 53                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 54                         | 2                        | 0.6% |         | 0.0% |             | 0.0% | 2      | 0.6% |
| 55                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 56                         | 2                        | 0.6% |         | 0.0% |             | 0.0% | 2      | 0.6% |
| 57                         | 3                        | 1.0% |         | 0.0% |             | 0.0% | 3      | 1.0% |
| 58                         | 1                        | 0.3% |         | 0.0% |             | 0.0% | 1      | 0.3% |
| 59                         | 3                        | 1.0% |         | 0.0% |             | 0.0% | 3      | 1.0% |
| 60                         |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 61                         | 5                        | 1.6% |         | 0.0% |             | 0.0% | 5      | 1.6% |
| 62                         | 4                        | 1.3% |         | 0.0% |             | 0.0% | 4      | 1.3% |
| 63                         | 9                        | 2.9% |         | 0.0% |             | 0.0% | 9      | 2.9% |
| 64                         | 3                        | 1.0% |         | 0.0% |             | 0.0% | 3      | 1.0% |
| 65                         | 7                        | 2.2% |         | 0.0% |             | 0.0% | 7      | 2.2% |
| 66                         | 4                        | 1.3% |         | 0.0% |             | 0.0% | 4      | 1.3% |
| 67                         | 4                        | 1.3% |         | 0.0% |             | 0.0% | 4      | 1.3% |
| 68                         | 6                        | 1.9% |         | 0.0% |             | 0.0% | 6      | 1.9% |
| 69                         | 4                        | 1.3% |         | 0.0% |             | 0.0% | 4      | 1.3% |
| 70                         | 8                        | 2.5% |         | 0.0% |             | 0.0% | 8      | 2.5% |
| 71                         | 16                       | 5.1% |         | 0.0% |             | 0.0% | 16     | 5.1% |
| 72                         | 13                       | 4.1% |         | 0.0% |             | 0.0% | 13     | 4.1% |
| 73                         | 14                       | 4.5% |         | 0.0% |             | 0.0% | 14     | 4.5% |
| 74                         | 6                        | 1.9% |         | 0.0% |             | 0.0% | 6      | 1.9% |
| 75                         | 4                        | 1.3% |         | 0.0% |             | 0.0% | 4      | 1.3% |
| 76                         | 4                        | 1.3% |         | 0.0% |             | 0.0% | 4      | 1.3% |
| 77                         | 8                        | 2.5% |         | 0.0% |             | 0.0% | 8      | 2.5% |
| 78                         | 6                        | 1.9% |         | 0.0% |             | 0.0% | 6      | 1.9% |
| 79                         | 6                        | 1.9% |         | 0.0% |             | 0.0% | 6      | 1.9% |
| 80                         | 6                        | 1.9% |         | 0.0% |             | 0.0% | 6      | 1.9% |
| 81                         | 4                        | 1.3% |         | 0.0% |             | 0.0% | 4      | 1.3% |
| 82                         | 8                        | 2.5% |         | 0.0% |             | 0.0% | 8      | 2.5% |
| 83                         | 7                        | 2.2% |         | 0.0% |             | 0.0% | 7      | 2.2% |
| 84                         | 4                        | 1.3% |         | 0.0% |             | 0.0% | 4      | 1.3% |
| 85                         | 1                        | 0.3% |         | 0.0% |             | 0.0% | 1      | 0.3% |
| 86                         | 7                        | 2.2% |         | 0.0% |             | 0.0% | 7      | 2.2% |
| 87                         | 5                        | 1.6% |         | 0.0% |             | 0.0% | 5      | 1.6% |
| 88                         | 3                        | 1.0% |         | 0.0% |             | 0.0% | 3      | 1.0% |
| 89                         | 6                        | 1.9% |         | 0.0% |             | 0.0% | 6      | 1.9% |
| 90                         | 5                        | 1.6% |         | 0.0% |             | 0.0% | 5      | 1.6% |
| 91                         | 3                        | 1.0% |         | 0.0% |             | 0.0% | 3      | 1.0% |
| 92                         | 4                        | 1.3% |         | 0.0% |             | 0.0% | 4      | 1.3% |
| 93                         | 4                        | 1.3% |         | 0.0% |             | 0.0% | 4      | 1.3% |
| 94                         | 3                        | 1.0% |         | 0.0% |             | 0.0% | 3      | 1.0% |
| 95                         | 4                        | 1.3% |         | 0.0% |             | 0.0% | 4      | 1.3% |
| 96                         | 5                        | 1.6% |         | 0.0% |             | 0.0% | 5      | 1.6% |
| 97                         | 4                        | 1.3% |         | 0.0% |             | 0.0% | 4      | 1.3% |
| 98                         | 2                        | 0.6% |         | 0.0% |             | 0.0% | 2      | 0.6% |
| 99                         | 4                        | 1.3% |         | 0.0% |             | 0.0% | 4      | 1.3% |
| 100                        |                          | 0.0% |         | 0.0% |             | 0.0% | 0      | 0.0% |
| 101                        | 4                        | 1.3% |         | 0.0% |             | 0.0% | 4      | 1.3% |
| 102                        |                          | 0.0% | 3       | 1.0% |             | 0.0% | 3      | 1.0% |
| 103                        | 1                        | 0.3% | 3       | 1.0% |             | 0.0% | 4      | 1.3% |



Table 4. (Page 2 of 2)

| CARAPACE<br>LENGTH<br>(mm) | PRERECRUIT<br>(Sublegal) |       | RECRUIT |      | POSTRECRUIT |       | TOTALS |        |
|----------------------------|--------------------------|-------|---------|------|-------------|-------|--------|--------|
|                            | No.                      | %     | No.     | %    | No.         | %     | No.    | %      |
| 104                        | 1                        | 0.3%  | 5       | 1.6% |             | 0.0%  | 6      | 1.9%   |
| 105                        | 1                        | 0.3%  |         | 0.0% |             | 0.0%  | 1      | 0.3%   |
| 106                        |                          | 0.0%  | 2       | 0.6% | 1           | 0.3%  | 3      | 1.0%   |
| 107                        |                          | 0.0%  | 3       | 1.0% |             | 0.0%  | 3      | 1.0%   |
| 108                        |                          | 0.0%  | 2       | 0.6% | 1           | 0.3%  | 3      | 1.0%   |
| 109                        |                          | 0.0%  | 1       | 0.3% | 1           | 0.3%  | 2      | 0.6%   |
| 110                        |                          | 0.0%  | 1       | 0.3% |             | 0.0%  | 1      | 0.3%   |
| 111                        |                          | 0.0%  | 1       | 0.3% |             | 0.0%  | 1      | 0.3%   |
| 112                        |                          | 0.0%  | 1       | 0.3% | 3           | 1.0%  | 4      | 1.3%   |
| 113                        |                          | 0.0%  | 1       | 0.3% | 3           | 1.0%  | 4      | 1.3%   |
| 114                        |                          | 0.0%  |         | 0.0% | 3           | 1.0%  | 3      | 1.0%   |
| 115                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 116                        |                          | 0.0%  |         | 0.0% | 2           | 0.6%  | 2      | 0.6%   |
| 117                        |                          | 0.0%  |         | 0.0% | 2           | 0.6%  | 2      | 0.6%   |
| 118                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 119                        |                          | 0.0%  |         | 0.0% | 1           | 0.3%  | 1      | 0.3%   |
| 120                        |                          | 0.0%  |         | 0.0% | 1           | 0.3%  | 1      | 0.3%   |
| 121                        |                          | 0.0%  |         | 0.0% | 3           | 1.0%  | 3      | 1.0%   |
| 122                        |                          | 0.0%  |         | 0.0% | 1           | 0.3%  | 1      | 0.3%   |
| 123                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 124                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 125                        |                          | 0.0%  |         | 0.0% | 2           | 0.6%  | 2      | 0.6%   |
| 126                        |                          | 0.0%  |         | 0.0% | 2           | 0.6%  | 2      | 0.6%   |
| 127                        |                          | 0.0%  |         | 0.0% | 2           | 0.6%  | 2      | 0.6%   |
| 128                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 129                        |                          | 0.0%  |         | 0.0% | 3           | 1.0%  | 3      | 1.0%   |
| 130                        |                          | 0.0%  |         | 0.0% | 1           | 0.3%  | 1      | 0.3%   |
| 131                        |                          | 0.0%  |         | 0.0% | 1           | 0.3%  | 1      | 0.3%   |
| 132                        |                          | 0.0%  |         | 0.0% | 1           | 0.3%  | 1      | 0.3%   |
| 133                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 134                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 135                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 136                        |                          | 0.0%  |         | 0.0% | 6           | 1.9%  | 6      | 1.9%   |
| 137                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 138                        |                          | 0.0%  |         | 0.0% | 1           | 0.3%  | 1      | 0.3%   |
| 139                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 140                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 141                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 142                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 143                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 144                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 145                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 146                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 147                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 148                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 149                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 150                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 151                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 152                        |                          | 0.0%  |         | 0.0% | 1           | 0.3%  | 1      | 0.3%   |
| 153                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 154                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 155                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 156                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 157                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 158                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 159                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 160                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 161                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 162                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 163                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 164                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 165                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 166                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 167                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 168                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 169                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 170                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 171                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 172                        |                          | 0.0%  |         | 0.0% |             | 0.0%  | 0      | 0.0%   |
| 173                        |                          | 0.0%  |         | 0.0% | 1           | 0.3%  | 1      | 0.3%   |
| Total No.                  | 248                      | 79.0% | 23      | 7.3% | 43          | 13.7% | 314    | 100.0% |



Table 5. Carapace length measurement summary of sampled female red king crab captured during the Norton Sound trawl survey, August 7 - 18, 1996.

| Carapace Length (mm) | Juvenile (<72mm & no clutch) |                  |       | Adult             |             |             |            |     |       |                  |       |       |
|----------------------|------------------------------|------------------|-------|-------------------|-------------|-------------|------------|-----|-------|------------------|-------|-------|
|                      | No.                          | Ave Length Calc. | %     | Percent Ovigerity |             |             |            |     | Total | Ave Length Calc. | %     |       |
|                      |                              |                  |       | Full (90-100%)    | Hi (60-89%) | Med (30-59) | Low (-29%) | 0   |       |                  |       |       |
| 23                   | 1                            | 0.21             | 0.9%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 24                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 25                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 26                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 27                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 28                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 29                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 30                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 31                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 32                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 33                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 34                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 35                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 36                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 37                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 38                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 39                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 40                   | 1                            | 0.37             | 0.9%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 41                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 42                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 43                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 44                   | 4                            | 1.61             | 3.7%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 45                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 46                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 47                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 48                   | 1                            | 0.44             | 0.9%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 49                   | 1                            | 0.45             | 0.9%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 50                   | 2                            | 0.92             | 1.8%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 51                   | 2                            | 0.94             | 1.8%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 52                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 53                   | 2                            | 0.97             | 1.8%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 54                   | 1                            | 0.50             | 0.9%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 55                   | 2                            | 1.01             | 1.8%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 56                   | 2                            | 1.03             | 1.8%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 57                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 58                   | 2                            | 1.06             | 1.8%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 59                   | 4                            | 2.17             | 3.7%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 60                   | 2                            | 1.10             | 1.8%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 61                   | 7                            | 3.92             | 6.4%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 62                   | 6                            | 3.41             | 5.5%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 63                   | 5                            | 2.89             | 4.6%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 64                   | 8                            | 4.70             | 7.3%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 65                   | 5                            | 2.98             | 4.6%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 66                   | 6                            | 3.63             | 5.5%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 67                   | 5                            | 3.07             | 4.6%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 68                   | 10                           | 6.24             | 9.2%  |                   |             |             | 1          |     |       | 1                | 1.21  | 1.8%  |
| 69                   | 5                            | 3.17             | 4.6%  |                   |             | 2           |            |     |       | 2                | 2.46  | 3.6%  |
| 70                   | 10                           | 6.42             | 9.2%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 71                   | 7                            | 4.56             | 6.4%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 72                   | 8                            | 5.28             | 7.3%  |                   |             |             |            |     |       | 1                | 1.29  | 1.8%  |
| 73                   |                              | 0.00             | 0.0%  | 1                 | 1           |             |            |     | 3     | 5                | 6.52  | 8.9%  |
| 74                   |                              | 0.00             | 0.0%  |                   |             | 1           |            |     | 2     | 3                | 3.96  | 5.4%  |
| 75                   |                              | 0.00             | 0.0%  | 1                 |             | 1           |            |     | 2     | 4                | 5.38  | 7.1%  |
| 76                   |                              | 0.00             | 0.0%  |                   | 1           | 1           |            |     | 1     | 3                | 4.07  | 5.4%  |
| 77                   |                              | 0.00             | 0.0%  |                   |             | 1           |            |     |       | 1                | 1.38  | 1.8%  |
| 78                   |                              | 0.00             | 0.0%  |                   |             | 2           |            | 1   | 2     | 5                | 6.96  | 8.9%  |
| 79                   |                              | 0.00             | 0.0%  | 1                 |             |             |            |     | 2     | 3                | 4.23  | 5.4%  |
| 80                   |                              | 0.00             | 0.0%  |                   | 1           |             |            |     |       | 1                | 1.43  | 1.8%  |
| 81                   |                              | 0.00             | 0.0%  |                   | 2           | 1           |            |     |       | 3                | 4.34  | 5.4%  |
| 82                   |                              | 0.00             | 0.0%  |                   | 3           | 1           |            |     |       | 4                | 5.86  | 7.1%  |
| 83                   |                              | 0.00             | 0.0%  | 2                 |             |             |            |     |       | 2                | 2.96  | 3.6%  |
| 84                   |                              | 0.00             | 0.0%  |                   | 2           |             | 1          |     |       | 3                | 4.50  | 5.4%  |
| 85                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 86                   |                              | 0.00             | 0.0%  | 1                 | 1           | 1           |            |     |       | 3                | 4.61  | 5.4%  |
| 87                   |                              | 0.00             | 0.0%  | 1                 |             |             |            |     |       | 1                | 1.55  | 1.8%  |
| 88                   |                              | 0.00             | 0.0%  |                   | 1           |             |            |     |       | 1                | 1.57  | 1.8%  |
| 89                   |                              | 0.00             | 0.0%  | 1                 |             |             |            |     |       | 1                | 1.59  | 1.8%  |
| 90                   |                              | 0.00             | 0.0%  |                   | 1           |             |            |     |       | 1                | 1.61  | 1.8%  |
| 91                   |                              | 0.00             | 0.0%  |                   | 1           |             |            |     |       | 1                | 1.63  | 1.8%  |
| 92                   |                              | 0.00             | 0.0%  |                   | 1           |             |            |     |       | 1                | 1.64  | 1.8%  |
| 93                   |                              | 0.00             | 0.0%  | 1                 |             |             |            |     |       | 1                | 1.66  | 1.8%  |
| 94                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 95                   |                              | 0.00             | 0.0%  |                   | 1           |             |            |     |       | 1                | 1.70  | 1.8%  |
| 96                   |                              | 0.00             | 0.0%  |                   | 2           |             |            |     |       | 2                | 3.43  | 3.6%  |
| 97                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 98                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 99                   |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 100                  |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 101                  |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 102                  |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 103                  |                              | 0.00             | 0.0%  | 1                 |             |             |            |     |       | 1                | 1.84  | 1.8%  |
| 104                  |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 105                  |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 106                  |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 107                  |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 108                  |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 109                  |                              | 0.00             | 0.0%  |                   |             |             |            |     |       | 0                | 0.00  | 0.0%  |
| 110                  |                              | 0.00             | 0.0%  | 1                 |             |             |            |     |       | 1                | 1.96  | 1.8%  |
| Total No.            | 109                          |                  | 66.1% | 11                | 23          | 8           | 2          | 12  | 56    |                  |       | 33.9% |
| Mean Length          |                              | 63.0             |       |                   |             |             |            |     |       |                  | 81.32 |       |
| % Adult Ovigerity    |                              |                  |       | 20%               | 41%         | 14%         | 4%         | 21% |       |                  |       |       |



Table 6. Red king crab tag information recovered during the commercial king crab harvest, Norton Sound Section, Eastern Bering Sea, July 1 - September 3, 1996.

| Tag Number | Capture Date | Stat. Area of Capture | Carapace Length (mm) | Shell Age | Tagging Date | Carapace Length (mm) | Growth (mm) | No. of Molts <sup>b</sup> | Skip Molts | Mean Growth per Molt (mm) |
|------------|--------------|-----------------------|----------------------|-----------|--------------|----------------------|-------------|---------------------------|------------|---------------------------|
| NX01847    | 8/17/96      | 666330                | 135                  | Old       | 4/16/90      | 101                  | 34          | 3                         | 3          | 11                        |
| NX02810 *  | 7/15/96      | 636330                |                      |           | 3/3/95       | 115                  |             |                           |            |                           |
| NX02814    | 7/16/96      | 656401                | 118                  | Old       | 3/3/95       | 116                  | 2           |                           |            |                           |
| NX02834 *  | 7/12/96      | 656402                |                      |           | 3/3/95       | 102                  |             |                           |            |                           |
| NX02858 *  | 7/15/96      | 636330                |                      |           | 3/6/95       | 110                  |             |                           |            |                           |
| NX02859    | 8/25/96      | 676400                | 117                  | New       | 3/6/95       | 105                  | 12          | 1                         |            | 12                        |
| NX02873    | 7/18/96      | 656401                | 123                  | Old       | 3/6/95       | 123                  | 0           |                           |            |                           |
| NX02901    | 8/19/96      | 636401                | 114                  | New       | 3/9/95       | 100                  | 14          | 1                         |            | 14                        |
| NX02917    | 8/31/96      | 666330                | 131                  | New       | 3/24/95      | 120                  | 11          | 1                         |            | 11                        |
| NX02949    | 8/20/96      | 666330                | 123                  | Old       | 3/22/95      | 123                  | 0           |                           |            |                           |
| NX02970    | 8/11/96      | 666330                | 111                  | New       | 3/7/95       | 101                  | 10          | 1                         |            | 10                        |
| NX03008    | 8/29/96      | 676400                | 109                  | Old       | 3/9/95       | 110                  | -1          |                           | 1          |                           |
| NX03028    | 7/14/96      | 656330                | 119                  | New       | 3/13/95      | 105                  | 14          | 1                         |            | 14                        |
| NX03127    | 8/25/96      | 666330                | 113                  | New       | 3/14/95      | 100                  | 13          | 1                         |            | 13                        |
| NX03155    | 8/25/96      | 676400                | 121                  | New       | 3/14/95      | 111                  | 10          | 1                         |            | 10                        |
| NX03180    | 8/20/96      | 666330                | 119                  | New       | 3/16/95      | 106                  | 13          | 1                         |            | 13                        |
| NX03202    | 8/29/96      | 666330                | 99                   | New       | 2/16/96      | 99                   | 0           |                           |            |                           |
| NX03252    | 8/31/96      | 676400                | 115                  | New       | 2/14/96      | 116                  | -1          |                           |            |                           |
| NX03356    | 8/15/96      | 666401                | 125                  | New       | 2/13/96      | 126                  | -1          |                           |            |                           |
| NX03494    | 7/13/96      | 656401                | 109                  | New       | 3/27/95      | 97                   | 12          | 1                         |            | 12                        |
| NX03518    | 8/29/96      | 676400                | 95                   | New       | 3/8/96       | 95                   | 0           |                           |            |                           |
| NX03602    | 8/11/96      | 656330                | 96                   | New       | 3/18/96      | 97                   | -1          |                           |            |                           |
| NX03678    | 7/17/96      | 656401                | 96                   | New       | 3/19/96      | 96                   | 0           |                           |            |                           |
| NZ02706    | 8/29/96      | 666330                | 95                   | New       | 3/22/96      | 76                   | 19          | 1                         |            | 19                        |

10

\* No length information available.

<sup>b</sup> Crab growth of 12 mm (+/- 5mm) per year is thought to be the average growth in one molting period.



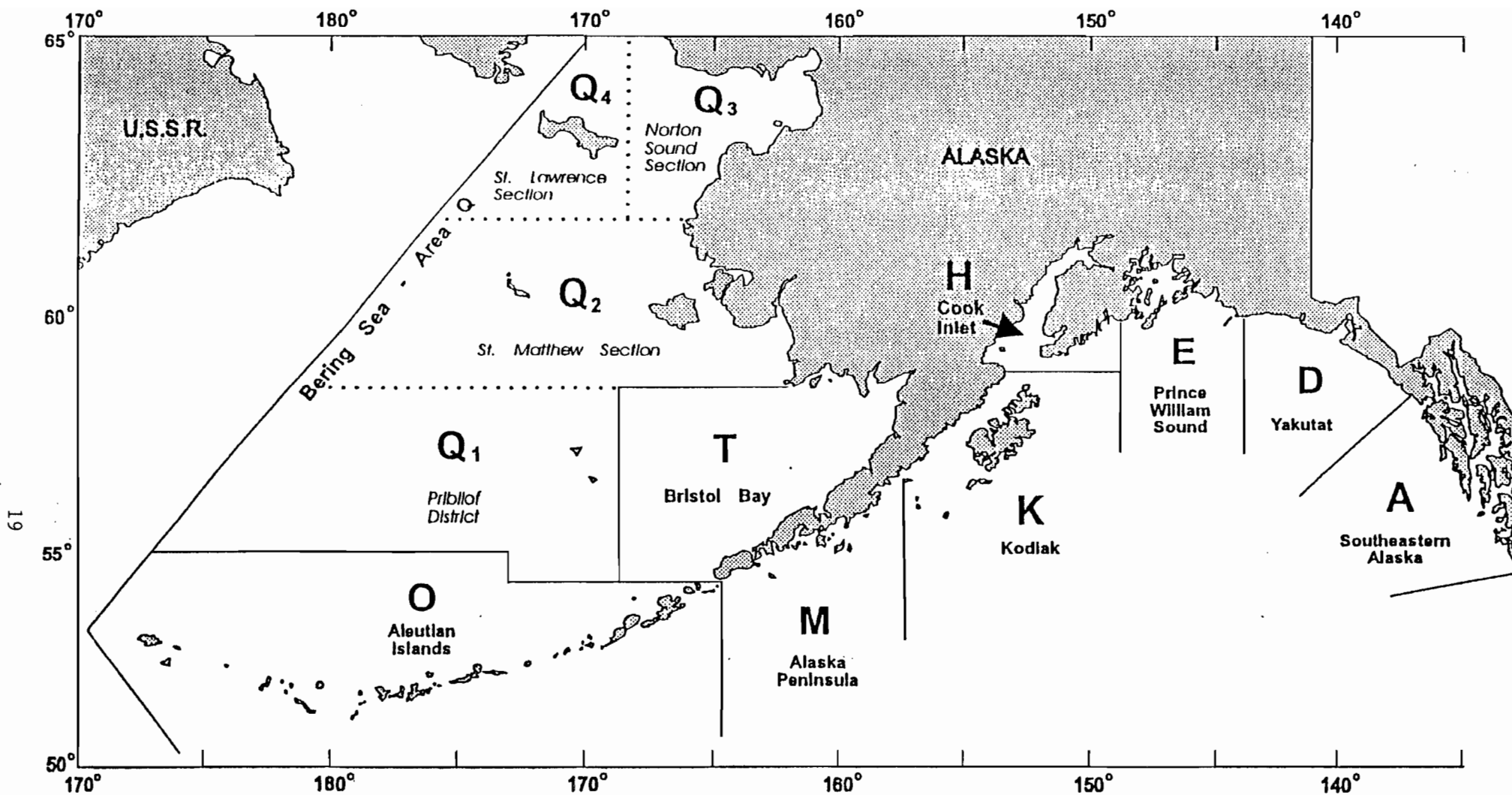
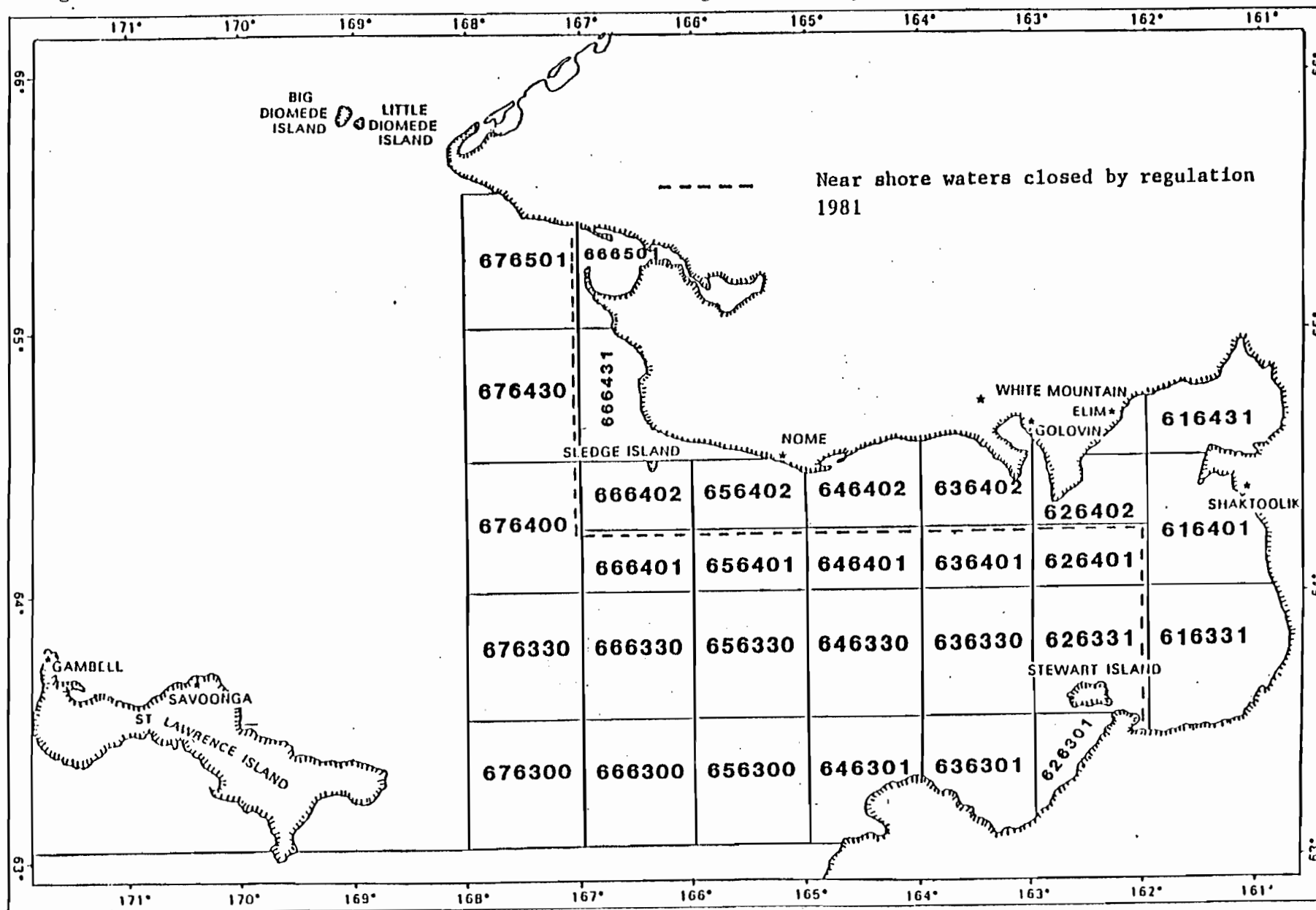


Figure 1. King Crab fishing districts and sections of Statistical Area Q.



Figure 2. Statistical areas for the Norton Sound red king crab fishery





# 1996 Norton Sound Red King Crab

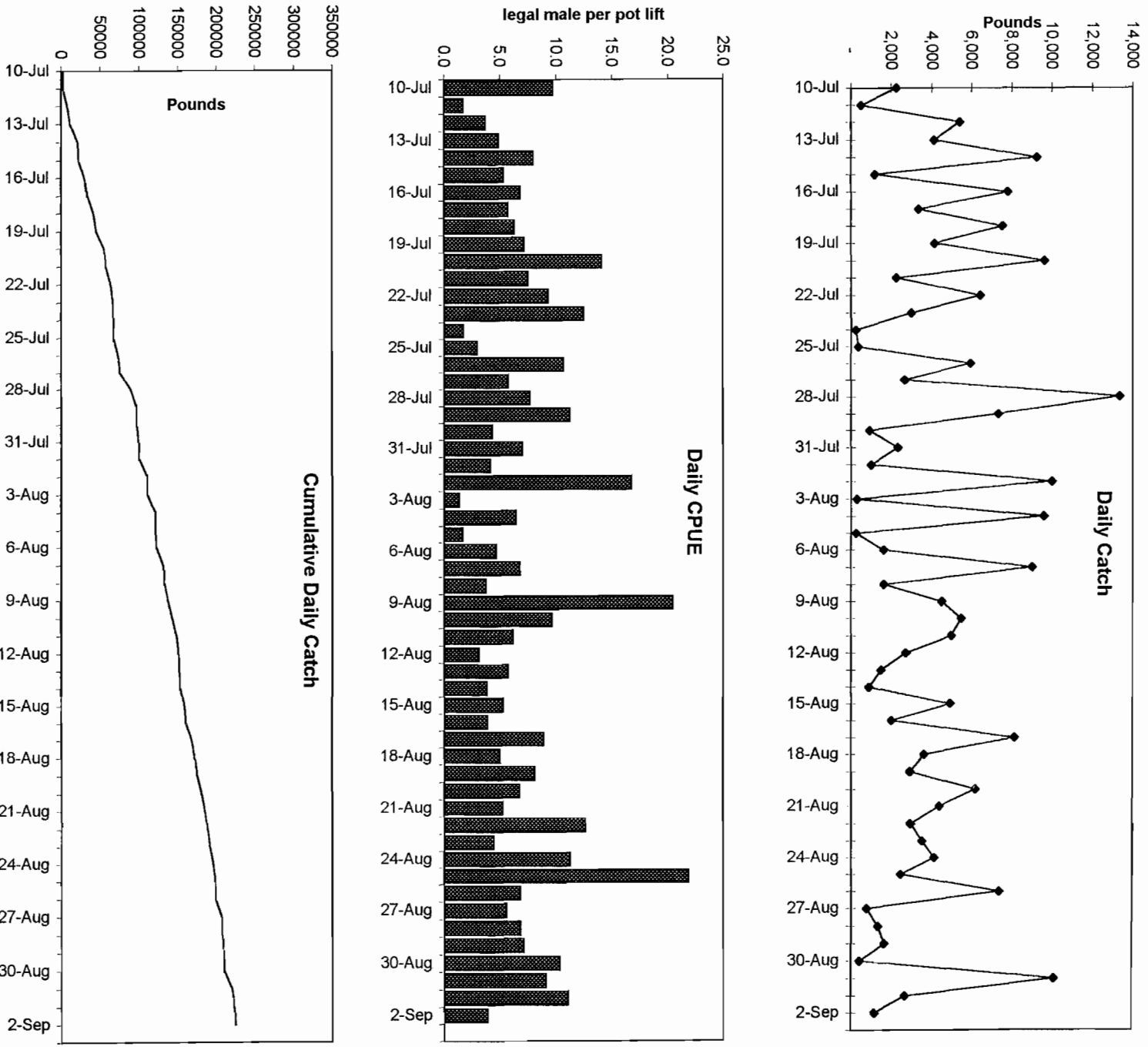


Figure 3. Daily catch, daily CPUE, and cumulative daily catch, Norton Sound summer commercial red king crab fishery, July 1 - September 3, 1996.



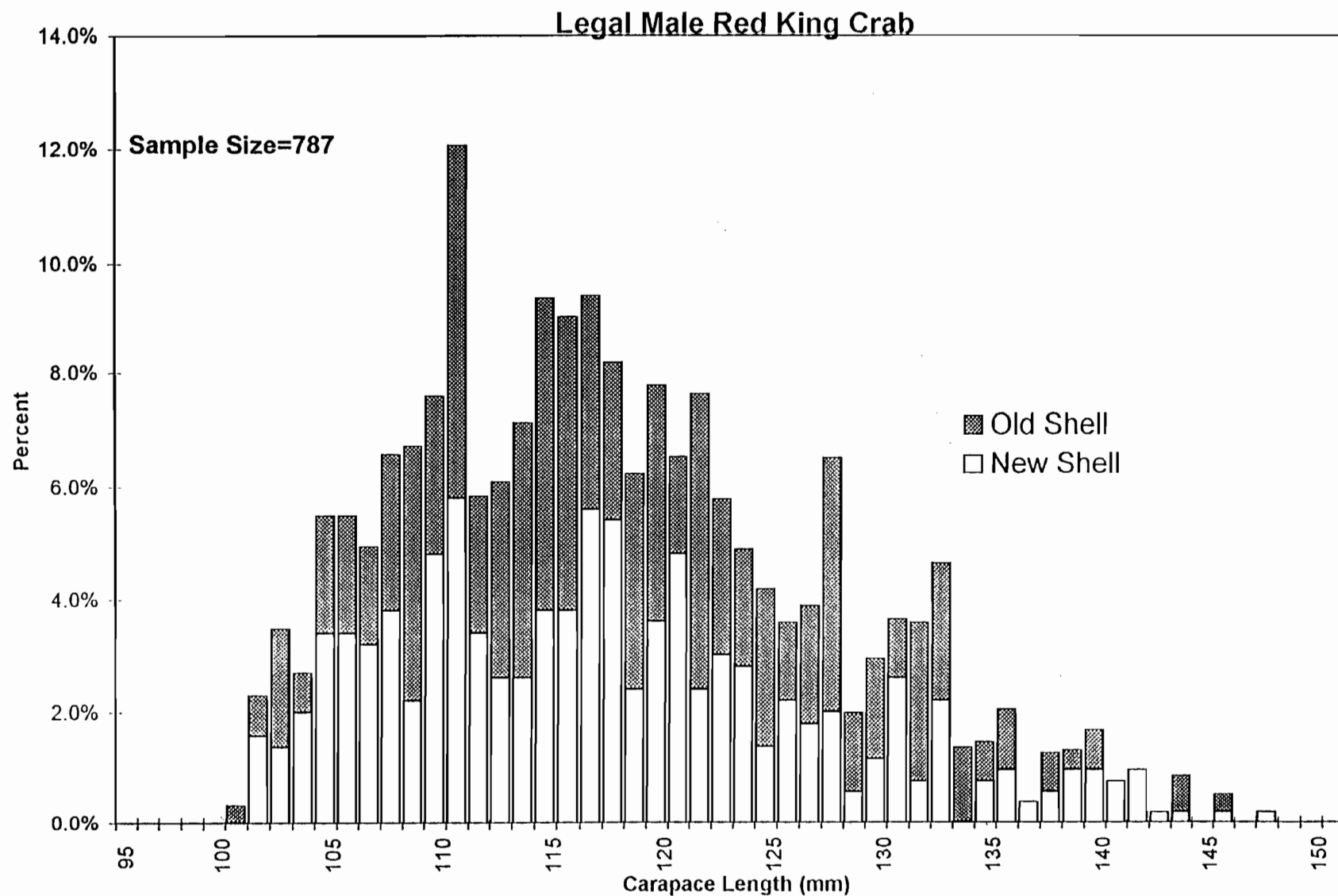


Figure 4. Length frequency distribution of new and old carapace age condition of legal male red king crab, Norton Sound summer king crab fishery, July 1 - September 3, 1996.



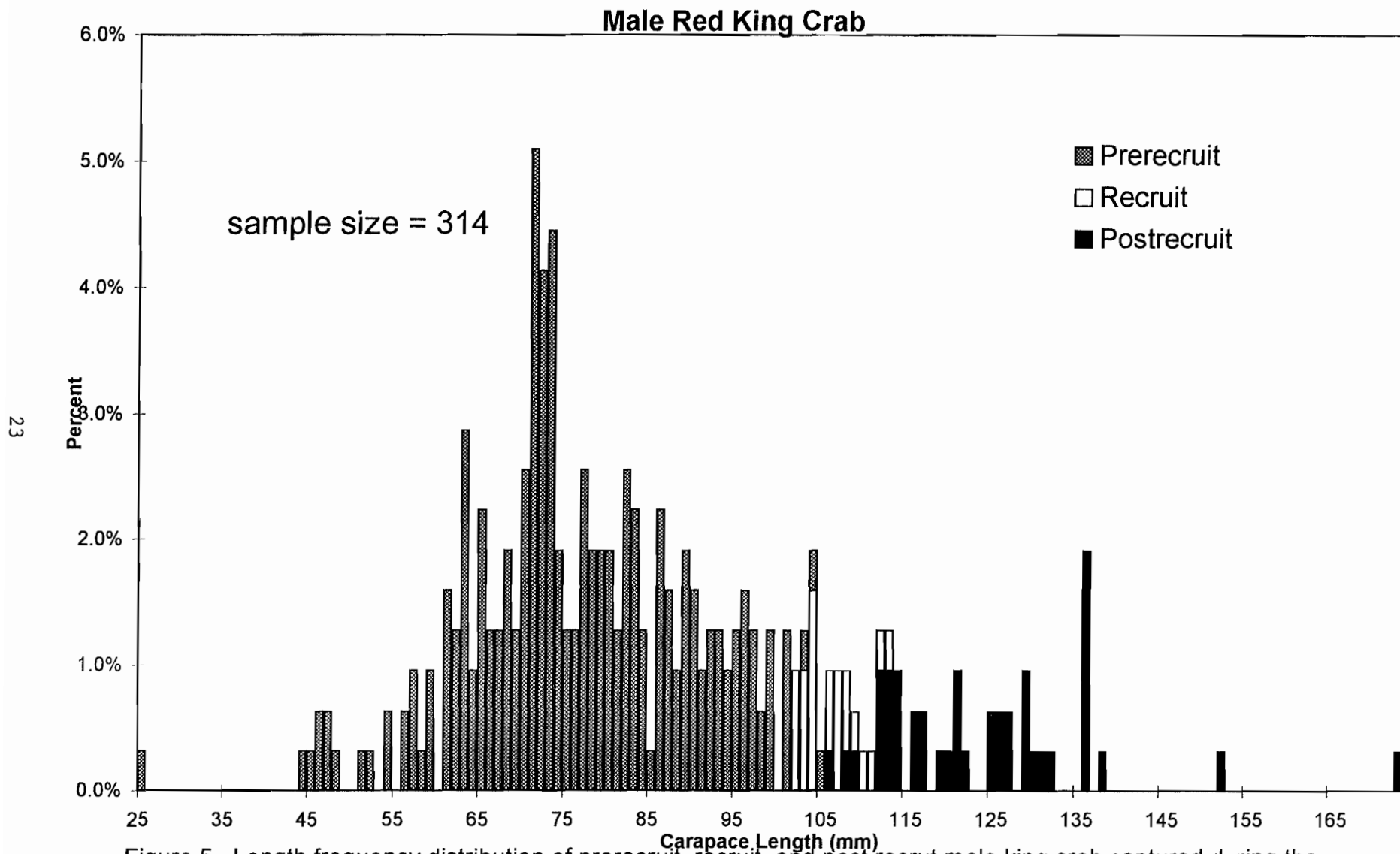


Figure 5. Length frequency distribution of prerecruit, recruit, and post recruit male king crab captured during the Norton Sound trawl survey, August 7 - 18, 1996.



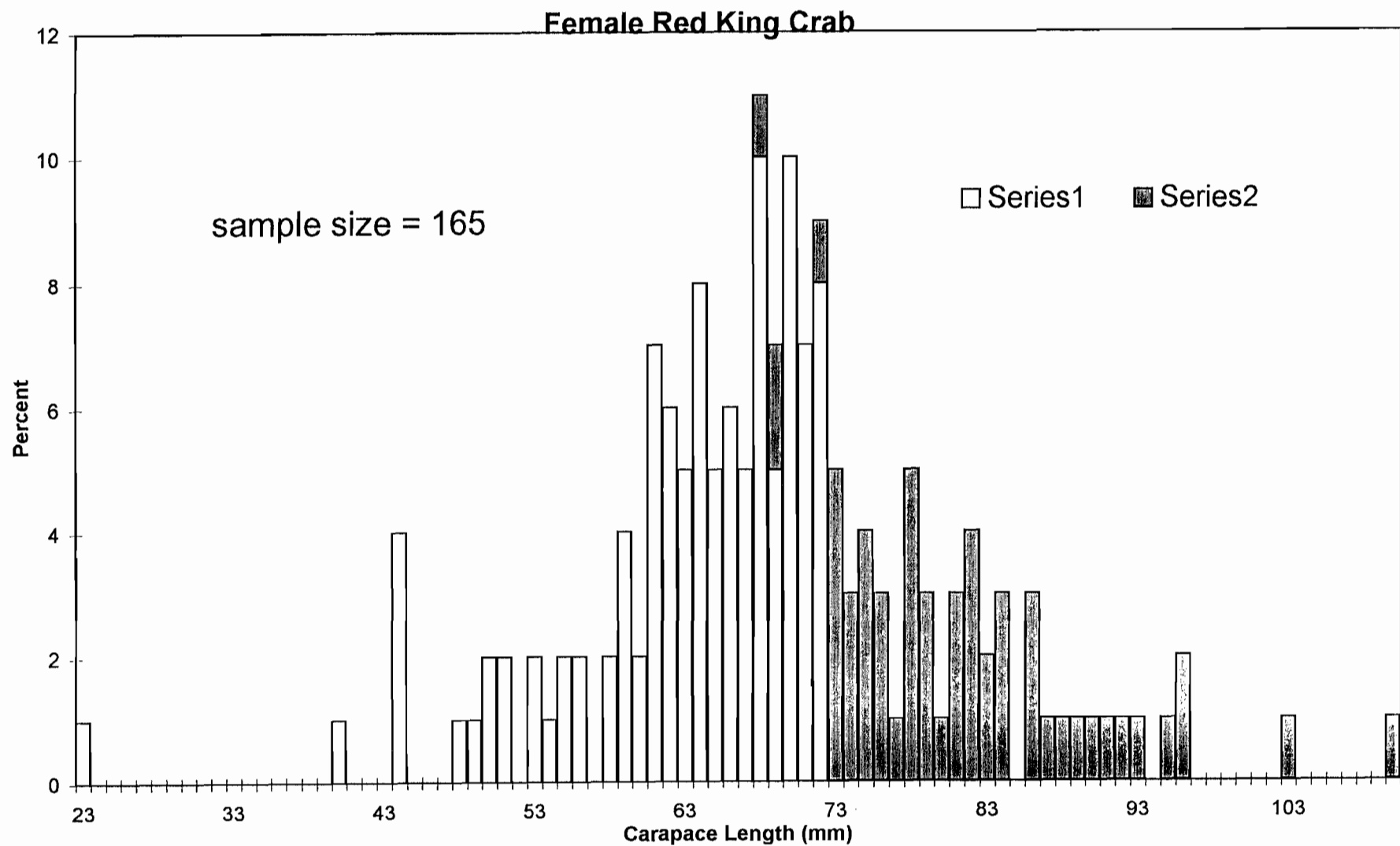


Figure 6. Length frequency distribution of female red king crab, juveniles and adults, captured during the Norton Sound trawl survey, August 7 - 18, 1996.



### Norton Sound Recent Red King Crab Harvest

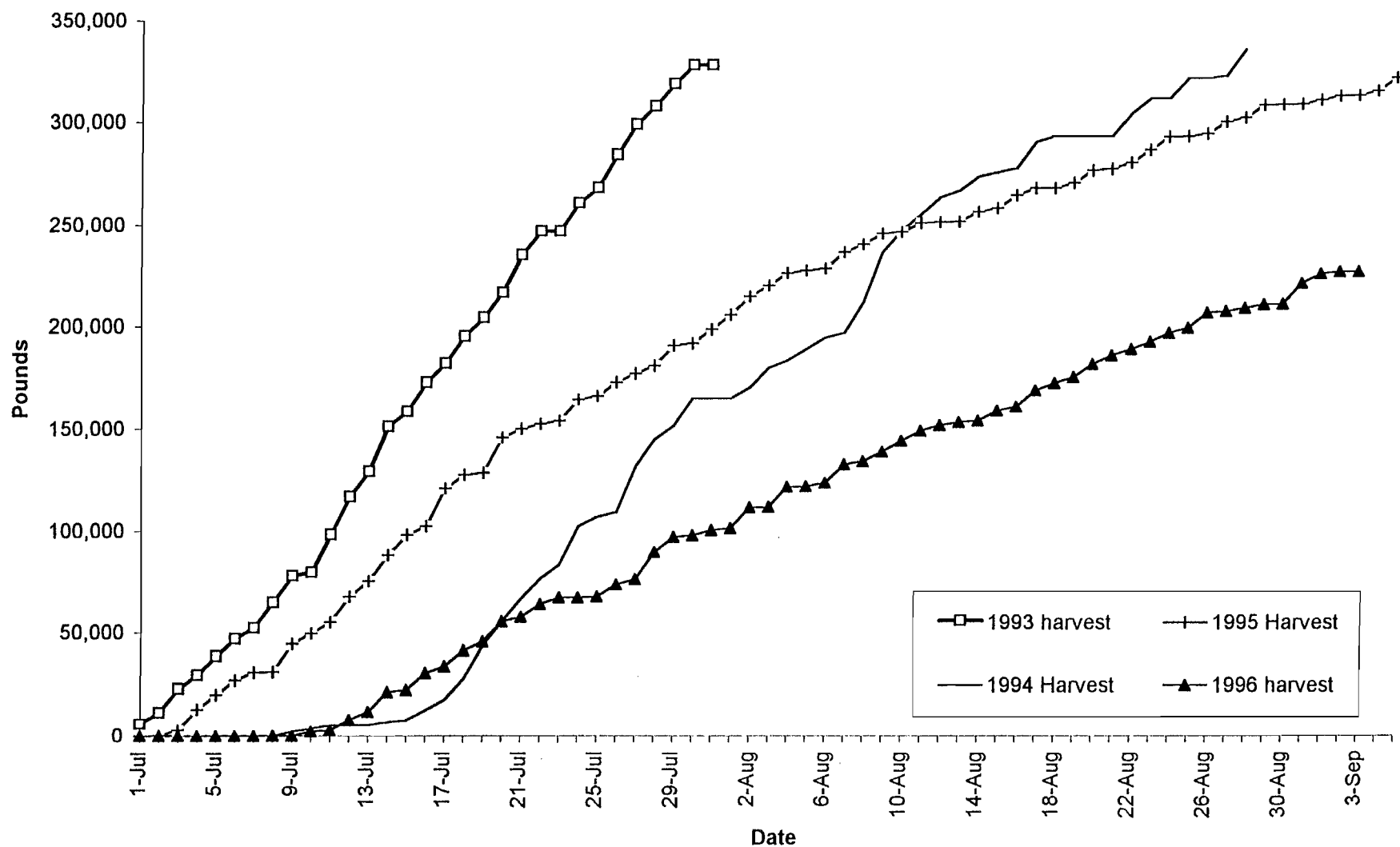


Figure 7. Recent Norton Sound summer commercial red king crab harvest, 1993 - 1996.



Appendix Table 1. Comparison of annual summer commercial harvest of red king crab from Norton Sound Section, Eastern Bering Sea, by statistical areas, 1977-1996 (catch in pounds) \*

| Statistical Area | 1977    | 1978      | 1979      | 1980      | 1981      | 1982    | 1983    | 1984    | 1985    | 1986    | 1987    | 1988    | 1989    | 1990    | 1992   | 1993    | 1994    | 1995    | 1996 <sup>b</sup> | Totals     |
|------------------|---------|-----------|-----------|-----------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|---------|---------|---------|-------------------|------------|
| 616331           | 7,893   |           |           |           |           |         |         |         |         |         |         |         |         |         |        |         | 48      |         |                   | 7,941      |
| 616401           |         |           |           |           |           |         |         |         |         |         |         |         |         |         |        |         |         | 35      |                   | 35         |
| 626331           | 40,020  |           |           |           |           | 22      |         |         |         |         |         |         |         |         |        |         |         |         | 61                | 40,103     |
| 626401           | 31,572  |           |           | 4,830     | 399       |         |         |         |         |         |         |         |         |         |        |         |         | 18,971  | 45,045            | 100,817    |
| 626402           | 38,995  |           |           |           |           |         |         |         |         |         |         |         |         |         |        |         |         |         |                   | 38,995     |
| 636330           |         |           |           |           |           |         |         |         |         |         |         |         |         |         |        |         |         |         | 4,560             | 4,560      |
| 636401           |         |           |           | 12,398    | 61,823    | 32,246  | 5,880   | 41      | 891     |         |         |         | 22,030  |         | 1,159  | 1,373   | 8,087   | 24,329  | 70,677            | 240,934    |
| 636402           |         |           |           |           |           |         |         |         |         |         |         |         |         |         |        |         | 1,754   | 3,466   |                   | 5,220      |
| 646301           |         |           |           |           |           |         |         |         |         |         |         |         |         |         |        |         |         | 4,628   | 13,888            | 18,516     |
| 646330           |         |           |           |           | 4,716     |         |         |         |         |         |         |         | 5,212   |         |        |         |         | 1,493   | 2,894             | 14,315     |
| 646401           |         |           | 155,972   |           | 1,319     | 17,532  |         |         |         |         |         |         |         |         |        | 1,963   | 37,222  | 105,045 | 22,834            | 341,887    |
| 646402           | 80,969  |           |           |           |           | 748     |         |         |         |         |         |         |         |         |        | 730     | 143,511 | 66,821  |                   | 292,779    |
| 656300           |         |           | 161,699   |           | 15,174    |         |         |         |         |         |         |         |         |         |        |         |         |         |                   | 176,873    |
| 656330           |         |           | 323,518   | 72,735    | 395,662   | 3,983   | 24,246  | 83,479  | 7,632   |         | 79,006  | 36,129  | 1,757   |         | 4,814  | 265     |         | 19,745  | 15,446            | 1,068,417  |
| 656401           |         |           | 138,011   | 121,147   | 253,387   | 60,480  | 11,422  | 183,119 | 246,200 |         | 194,408 | 165,644 | 100,956 | 171     | 53,119 | 105,341 | 29,566  | 32,289  | 9,985             | 1,705,245  |
| 656402           | 306,302 | 90,187    | 288,869   | 918       | 3,098     | 2,832   |         |         | 132,363 |         |         |         |         |         |        | 193,079 | 106,053 | 44,000  |                   | 1,167,701  |
| 666230           |         | 55,490    |           |           | 77        |         |         |         |         |         |         |         |         |         |        |         |         |         |                   | 55,567     |
| 666300           |         | 162,795   | 60,816    | 84,874    | 9,167     | 95      |         | 4,534   |         |         |         |         |         |         |        |         |         |         | 25,519            | 347,800    |
| 666330           |         | 353,016   | 505,050   | 367,446   | 141,513   | 8,990   | 1,192   |         | 389     | 70,615  | 2,963   | 13,020  | 1,275   | 27,185  | 4,305  | 31,758  |         | 730     |                   | 1,529,447  |
| 666401           |         | 179,212   | 486,947   | 205,400   | 381,510   | 79,580  | 325,045 | 116,254 | 5,341   | 408,848 | 50,744  | 21,895  | 115,257 | 162,263 | 10,632 | 746     | 396     |         | 3,001             | 2,553,071  |
| 666402           | 12,036  | 515,778   | 534,938   | 183,581   |           | 17,585  |         |         | 32,992  |         |         |         |         |         |        | 535     | 1,221   |         |                   | 1,298,666  |
| 666431           |         |           | 146,029   |           |           |         |         |         |         |         |         |         |         |         |        |         |         | 1,124   |                   | 147,153    |
| 676300           |         | 13,238    |           | 126,231   |           |         |         |         |         |         |         |         |         |         |        |         |         |         | 546               | 140,015    |
| 676330           |         | 51,304    | 81,798    | 6,762     | 18,734    |         |         |         |         |         |         |         |         |         |        |         |         |         |                   | 158,598    |
| 676400           |         | 667,130   | 33,856    | 274       | 92,026    | 1,315   | 247     |         | 32      |         |         |         |         | 3,212   |        |         |         |         | 9,775             | 807,867    |
| 676430           |         | 3,811     | 12,309    |           | 373       | 3,513   |         |         | 1,171   |         |         |         |         |         |        |         |         |         |                   | 21,177     |
| 676501           |         |           |           |           | 36        |         |         |         |         |         |         |         |         |         |        |         |         |         |                   | 36         |
| 686330           |         |           | 1,860     |           |           |         |         |         |         |         |         |         |         |         |        |         |         |         |                   | 1,860      |
| Totals           | 517,787 | 2,091,961 | 2,931,672 | 1,186,596 | 1,379,014 | 228,921 | 368,032 | 387,427 | 427,011 | 479,463 | 327,121 | 236,688 | 246,487 | 192,831 | 74,029 | 335,790 | 327,858 | 322,676 | 224,231           | 12,285,595 |

\* No commercial fishery occurred in 1991.

<sup>b</sup> Does not include approximately 2,490 lbs not reported on fish tickets.



Appendix Table 2. Historic summer commercial red king crab harvest, Norton Sound Section, Eastern Bering Sea, 1977 - 1996.

| Year              | Number of<br>Vessels | Number of<br>Permits | Number of<br>Landings | Number of<br>Crab | Harvest (lbs) <sup>a,b</sup> | Number of<br>Pot Lifts | CPUE | Percent<br>Old Shell | Average<br>Weight (lbs) | Avg. Legal<br>Mean Length(mm) |
|-------------------|----------------------|----------------------|-----------------------|-------------------|------------------------------|------------------------|------|----------------------|-------------------------|-------------------------------|
| 1977              | 7                    | 7                    | 13                    | 195,877           | 0.52                         | 5,457                  | 36   | <sup>d</sup>         | 2.7                     | 113.4                         |
| 1978              | 8                    | 8                    | 54                    | 660,829           | 2.09                         | 10,817                 | 64   | <sup>d</sup>         | 3.0                     | 118.9                         |
| 1979              | 34                   | 34                   | 76                    | 970,962           | 2.93                         | 34,773                 | 28   | <sup>d</sup>         | 3.0                     | 119.8                         |
| 1980              | 9                    | 9                    | 50                    | 329,778           | 1.19                         | 11,199                 | 29   | <sup>d</sup>         | 3.6                     | 125.8                         |
| 1981              | 36                   | 36                   | 108                   | 376,313           | 1.38                         | 33,745                 | 11   | <sup>d</sup>         | 3.7                     | 128.5                         |
| 1982              | 11                   | 11                   | 33                    | 63,949            | 0.23                         | 11,230                 | 6    | <sup>d</sup>         | 3.6                     | 125.4                         |
| 1983              | 23                   | 23                   | 26                    | 132,205           | 0.37                         | 11,195                 | 12   | <sup>d</sup>         | 2.8                     | 115.2                         |
| 1984              | 8                    | 8                    | 21                    | 139,759           | 0.39                         | 9,706                  | 14   | <sup>d</sup>         | 2.8                     | 112.5                         |
| 1985              | 6                    | 6                    | 72                    | 146,669           | 0.43                         | 13,209                 | 11   | <sup>d</sup>         | 2.9                     | 115.8                         |
| 1986              | 3                    | 3                    | <sup>d</sup>          | 162,438           | 0.48                         | 4,284                  | 38   | <sup>d</sup>         | 2.9                     | 115.9                         |
| 1987              | 9                    | 9                    | <sup>d</sup>          | 103,338           | 0.33                         | 10,258                 | 10   | 13                   | 3.2                     | 121.7                         |
| 1988              | 2                    | 2                    | <sup>d</sup>          | 76,148            | 0.24                         | 2,350                  | 32   | 26                   | 3.1                     | 119.0                         |
| 1989              | 10                   | 10                   | <sup>d</sup>          | 79,116            | 0.25                         | 5,149                  | 15   | 29                   | 3.1                     | 119.8                         |
| 1990              | 4                    | 4                    | <sup>d</sup>          | 59,132            | 0.19                         | 3,172                  | 19   | 17                   | 3.1                     | 121.1                         |
| 1991 <sup>c</sup> |                      |                      |                       |                   |                              |                        |      |                      |                         |                               |
| 1992              | 27                   | 27                   | <sup>d</sup>          | 24,902            | 0.07                         | 5,746                  | 4    | 29                   | 3.0                     | 119.7                         |
| 1993              | 14                   | 20                   | 208                   | 115,913           | 0.33                         | 7,063                  | 16   | 10                   | 2.9                     | 119.1                         |
| 1994              | 34                   | 52                   | 407                   | 108,824           | 0.32                         | 11,729                 | 9    | 71                   | 3.0                     | 118.8                         |
| 1995              | 48                   | 81                   | 665                   | 105,967           | 0.32                         | 18,782                 | 5.6  | 21                   | 3.0                     | 118.2                         |
| 1996              | 41                   | 50                   | 264                   | 74,752            | 0.22                         | 10,453                 | 7.1  | 36                   | 3.0                     | 117.1                         |

<sup>a</sup> Deadloss included in total.  
<sup>b</sup> Millions of pounds.  
<sup>c</sup> No summer commercial fishery.  
<sup>d</sup> Information not available.



Appendix Table 3. Historic summer commercial red king crab economic performance, Norton Sound Section, Eastern Bering Sea, 1977 - 1996.

| Year              | Guidline                         | Legal Male                  | Commercial                   | Number of |         |              | Number of Pots |        | Exvessel      | Fishery Value | Season Length |                       |
|-------------------|----------------------------------|-----------------------------|------------------------------|-----------|---------|--------------|----------------|--------|---------------|---------------|---------------|-----------------------|
|                   | Harvest Level (lbs) <sup>b</sup> | Pop. Est.(lbs) <sup>b</sup> | Harvest (lbs) <sup>a,b</sup> | Vessels   | Permits | Landings     | Registered     | Pulls  | Price/lb (\$) | (millions \$) | Days          | Dates                 |
| 1977              | <sup>d</sup>                     | 10.0                        | 0.52                         | 7         | 7       | 13           | <sup>d</sup>   | 5,457  | 0.75          | 0.229         | 60            | <sup>d</sup>          |
| 1978              | 3.00                             | 11.0                        | 2.09                         | 8         | 8       | 54           | <sup>d</sup>   | 10,817 | 0.95          | 1.897         | 60            | 6/7-8/15              |
| 1979              | 3.00                             | 5.4                         | 2.93                         | 34        | 34      | 76           | <sup>d</sup>   | 34,773 | 0.75          | 1.878         | 16            | 7/15-7/31             |
| 1980              | 1.00                             | 6.6                         | 1.19                         | 9         | 9       | 50           | <sup>d</sup>   | 11,199 | 0.75          | 0.890         | 16            | 7/15-7/31             |
| 1981              | 2.50                             | 4.7                         | 1.38                         | 36        | 36      | 108          | <sup>d</sup>   | 33,745 | 0.85          | 1.172         | 38            | 7/15-8/22             |
| 1982              | 0.50                             | 1.3                         | 0.23                         | 11        | 11      | 33           | <sup>d</sup>   | 11,230 | 2.00          | 0.405         | 23            | 8/9-9/1               |
| 1983              | 0.30                             | 2.1                         | 0.37                         | 23        | 23      | 26           | 3,583          | 11,195 | 1.50          | 0.537         | 3.8           | 8/1-8/5               |
| 1984              | 0.40                             | 2.7                         | 0.39                         | 8         | 8       | 21           | 1,245          | 9,706  | 1.02          | 0.395         | 13.6          | 8/1-8/15              |
| 1985              | 0.45                             | 2.4                         | 0.43                         | 6         | 6       | 72           | 1,116          | 13,209 | 1.00          | 0.427         | 21.7          | 8/1-8/23              |
| 1986              | 0.42                             | 2.8                         | 0.48                         | 3         | 3       | <sup>d</sup> | 578            | 4,284  | 1.25          | 0.600         | 13            | 8/1-8/25 <sup>e</sup> |
| 1987              | 0.40                             | 2.2                         | 0.33                         | 9         | 9       | <sup>d</sup> | 1,430          | 10,258 | 1.50          | 0.491         | 11            | 8/1-8/12              |
| 1988              | 0.20                             | 3.2                         | 0.24                         | 2         | 2       | <sup>d</sup> | 360            | 2,350  | <sup>d</sup>  | <sup>d</sup>  | 9.9           | 8/1-8/11              |
| 1989              | 0.20                             | 3.2                         | 0.25                         | 10        | 10      | <sup>d</sup> | 2,555          | 5,149  | 3.00          | 0.739         | 3             | 8/1-8/4               |
| 1990              | 0.20                             | 3.2                         | 0.19                         | 4         | 4       | <sup>d</sup> | 1,388          | 3,172  | <sup>d</sup>  | <sup>d</sup>  | 4             | 8/1-8/5               |
| 1991 <sup>c</sup> | 0.34                             | 3.4                         |                              |           |         |              |                |        |               |               |               |                       |
| 1992              | 0.34                             | 3.4                         | 0.07                         | 27        | 27      | <sup>d</sup> | 2,635          | 5,746  | 1.75          | 0.130         | 2             | 8/1-8/3               |
| 1993              | 0.34                             | 3.4                         | 0.33                         | 14        | 20      | 208          | 560            | 7,063  | 1.28          | 0.430         | 52            | 7/1-8/28 <sup>f</sup> |
| 1994              | 0.34                             | 3.4                         | 0.32                         | 34        | 52      | 407          | 1,360          | 11,729 | 2.02          | 0.646         | 31            | 7/1-7/31              |
| 1995              | 0.34                             | 3.4                         | 0.32                         | 48        | 81      | 665          | 1,900          | 18,782 | 2.87          | 0.926         | 67            | 7/1-9/5               |
| 1996              | 0.34                             | 3.4                         | 0.22                         | 41        | 50      | 264          | 1,640          | 10,453 | 2.29          | 0.519         | 57            | 7/1-9/3 <sup>g</sup>  |

<sup>a</sup> Deadloss included in total.

<sup>b</sup> Millions of pounds.

<sup>c</sup> No summer commercial fishery.

<sup>d</sup> Information not available.

<sup>e</sup> Fishing actually began 8/12 due to late arrival of fishing fleet.

<sup>f</sup> Fishing actually began 7/8 due to late arrival of fishing fleet.

<sup>g</sup> Fishing actually began 7/9 due to fishermen's strike.



Appendix Table 4. Comparison of percent recruit and postrecruit king crab sampled from summer commercial fisheries Norton Sound Section, Eastern Bering Sea, 1983 - 1996.

| Year              | Summer Commercial |                     |
|-------------------|-------------------|---------------------|
|                   | Recruits<br>(%)   | Postrecruits<br>(%) |
| 1983              | 55                | 45                  |
| 1984              | 59                | 41                  |
| 1985              | 45                | 55                  |
| 1986              | 48                | 52                  |
| 1987              | 22                | 78                  |
| 1988              | 25                | 75                  |
| 1989              | 23                | 77                  |
| 1990              | 21                | 79                  |
| 1991 <sup>a</sup> |                   |                     |
| 1992              | 28                | 72                  |
| 1993              | 31                | 69                  |
| 1994              | 14                | 86                  |
| 1995              | 36                | 64                  |
| 1996              | 30                | 70                  |

<sup>a</sup> No data collected in summer 1991 due to closed fishery.



Appendix Table 5. Results of the population assessment surveys conducted for red king crab in Norton Sound since 1976.

| Year | Date        | Research Agency | Vessel         | Gear Effort | Number of Red King Crab Captured <sup>a</sup> |                          | Females | Population Estimates of Legal Male Crab <sup>c</sup> |                        |
|------|-------------|-----------------|----------------|-------------|---|--------------------------|---------|--|------------------------|
|      |             |                 |                |             | Sublegal Males                                | Legal <sup>b</sup> Males |         | Numbers  | Pounds                 |
| 1976 | 9/02 - 9/05 | NMFS            | Miller-Freeman | Trawl       | 768   | 555                      | 180     | 3,119,800  | 8,111,480              |
|      | 9/16 -10/07 |                 |                | 158 tows    |   |                          |         |  |                        |
| 1979 | 7/26 - 8/05 | NMFS            | Miller-Freeman | Trawl       | 46  | 194                      | 40      | 837,241  | 2,511,723              |
|      |             |                 |                | 71 tows     |   |                          |         |  |                        |
| 1980 | 7/04 - 7/14 | ADF&G           | Altair         | Pots        | 443   | 3,290                    | 158     | 1,900,000  | 6,600,000 <sup>d</sup> |
|      |             |                 |                | 397 lifts   |   |                          |         |  |                        |
| 1981 | 6/28 - 7/14 | ADF&G           | Altair         | Pots        | 4,097   | 3,415                    | 1,933   | 1,285,195  | 4,755,221              |
|      |             |                 |                | 718 lifts   |   |                          |         |  |                        |
| 1982 | 7/06 - 7/20 | ADF&G           | Aleutian #1    | Pots        | 5,019   | 2,001                    | 424     | 353,273  | 1,271,783              |
|      |             |                 |                | 689 lifts   |   |                          |         |  |                        |
| 1982 | 9/05 - 9/11 | NMFS            | Miller-Freeman | Trawl       | 322   | 107                      | 265     | 970,646  | 2,620,744              |
|      |             |                 |                | 50 tows     |   |                          |         |  |                        |
| 1985 | 7/01 - 7/14 | ADF&G           | Arctic Sea     | Pots        | 6,086   | 4,645                    | 181     | 907,579  | 2,414,644              |
|      |             |                 |                | 642 lifts   |   |                          |         |  |                        |
| 1985 | 9/16 -10/01 | NMFS            | Argosy         | Trawl       | 266   | 163                      | 151     | 1,203,000  | 3,369,000              |
|      |             |                 |                | 78 tows     |   |                          |         |  |                        |
| 1988 | 8/16 - 8/30 | NMFS            | Miller-Freeman | Trawl       | 258   | 141                      | 218     | 1,037,000  | 3,038,000              |
|      |             |                 |                | 82 tows     |   |                          |         |  |                        |
| 1991 | 8/22 - 8/30 | NMFS            | Ocean Hope     | Trawl       | 202   | 178                      | 105     | 1,384,000  | 4,009,000              |
|      |             |                 |                | 53 tows     |   |                          |         |  |                        |
| 1996 | 8/7 - 8/18  | ADF&G           | Peggy Jo       | Trawl       | 250   | 67                       | 168     | 534,446  | 1,603,339              |
|      |             |                 |                | 69 tows     |   |                          |         |  |                        |

<sup>a</sup> Number of crab captured on ADF&G surveys from 1980 - 1985 represent data standardized for a 24 hour soak.

<sup>b</sup> Legal male red king crab were defined as at least 106mm in carapace length for the 1976 NMFS survey; 105mm for the 1979 and 1985 NMFS survey; and at least 121mm in carapace width for all ADF&G surveys.

<sup>c</sup> Population estimates are valid for the date of the survey, ie either before or after the summer commercial fishery.

<sup>d</sup> The 1980 estimate has been revised from the original estimate of 13.4 million pounds. The original estimate was thought inaccurate due to under-reporting of recovered tagged crab.



Appendix Table 6.

Observer crab catch summary: number of observed pot lifts, percent of catch by legal male, sublegal male and female crab; and average crab per pot; Norton Sound summer commercial fishery, 1988 - 1996.

| Year | # Pots<br>Observed | Legal Male Crab |              | Sublegal Male Crab |              | Female Crab |              |
|------|--------------------|-----------------|--------------|--------------------|--------------|-------------|--------------|
|      |                    | %               | Crab per Pot | %                  | Crab per Pot | %           | Crab per Pot |
| 1988 | 1673               | 81.6            | 35.4         | 17.1               | 7.4          | 1.3         | 0.6          |
| 1989 | 909                | 68.5            | 13.7         | 15.4               | 3.1          | 16.1        | 3.2          |
| 1990 | 168                | 77.8            | 13.6         | 21.0               | 3.7          | 1.2         | 0.2          |
| 1992 | 733                | 70.1            | 1.9          | 22.7               | 0.6          | 7.3         | 0.2          |
| 1993 | 0                  |                 |              |                    |              |             |              |
| 1994 | 199                | 60.7            | 7.7          | 34.1               | 4.3          | 5.2         | 0.7          |
| 1995 | 99                 | 60.5            | 2.5          | 29.0               | 1.2          | 10.5        | 0.4          |
| 1996 | 0                  |                 |              |                    |              |             |              |